COASTAL ZONE MANAGEMENT

Coastal Zone
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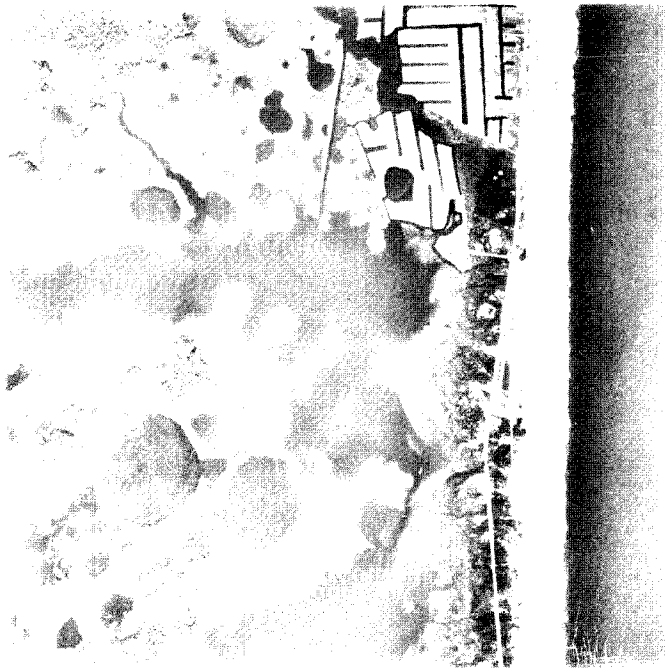
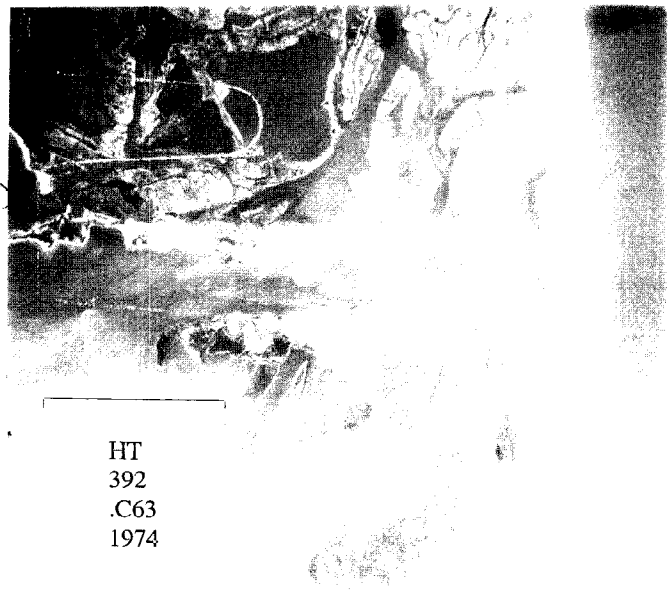
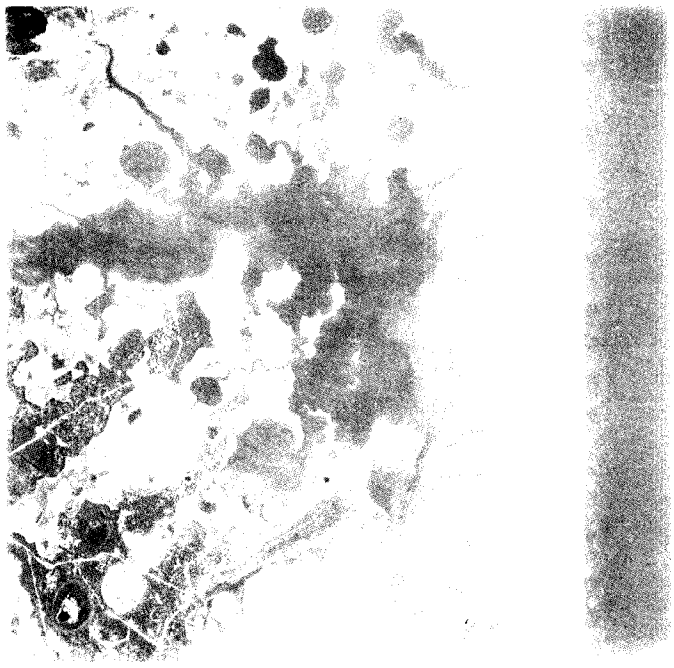
the process of program development







ACTUAL AERIAL PHOTOGRAPHS SHOWING CHANGES OVER TIME IN TWO DIFFERENT COASTAL AREAS.

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COASTAL ZONE MANAGEMENT:
THE PROCESS OF PROGRAM DEVELOPMENT

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FOREWARD
by
Robert W. Knecht

This document, which was prepared under contract to the Office of Coastal Zone Management, NOAA, is intended to serve as a technical guide to state and local officials involved in the development and implementation of coastal zone management programs. It has been organized in such a way as to parallel the requirements for management program development which are contained in the Coastal Zone Management Act of 1972 and the Section 305 regulations published November 29, 1973, in the Federal Register (15 CFR 920). Additional information on the design of a management program consistent with the Act's requirements is contained in the criteria for management program approval published in draft form August 21, 1974, in the Federal Register (15 CFR 923).

The Office of Coastal Zone Management has worked closely with the Coastal Zone Management Institute to ensure that the information contained in this document is generally consistent with the Coastal Zone Management Act. Nonetheless, this document should not be viewed as having the standing of official rules, regulations, or guidelines. Such rules, regulations, and guidelines affecting the implementation of the Act are formally published in the Federal Register on a regular basis. Copies of all relevant rules and regulations published to date are appended to this document.

It is our hope that the information contained in this document will be of value both to those involved in long-term planning and those working in coastal zone management on a day-to-day basis. This document is one of several kinds of technical assistance that the Office of Coastal Zone Management is making available to state and local officials. Further information on this aspect of the program can be obtained by writing to the Director, Office of Coastal Zone Management, NOAA, Rockville, Maryland 20852.

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CHAPTER I
INTRODUCTION

1. Background

The Coastal Zone Management Act of 1972 was enacted to encourage the several coastal states to develop comprehensive coastal resources management programs which provide for wise and effective management of the nation's valuable coastal areas. In formulating their programs to comply with the Act, states may choose from several possibilities the management rationale or approach that best fits their needs and conditions.

The fundamental precept that each state must address is its commitment to the management of its coastal zone on a coordinated and comprehensive basis. To accomplish this the states will receive federal support to formulate goals, objectives, criteria, and approaches which result in a total and objective approach to the problems of the coastal zone.

The Act presents, either directly or indirectly, several objectives that states should consider:

- A clear intent to raise the level of consciousness at all levels of government regarding the importance of the resources of the coastal zone, and the need for their balanced management;
- the need for states to understand and articulate the impacts that can result from various uses of the resources, and to understand the short and long-term consequences of such impacts on the coastal zone;
- the need to minimize adverse impacts; and
- the need to broaden and diversify the decision-making process to include a spectrum of those affected by management decisions.

2. Management Programs

The Act defines a management program as "a comprehensive statement in words, maps, illustrations, or other permanent media of communication...setting forth objectives, policies, and standards to guide and regulate public and private uses of the lands and waters in the coastal zone."

A management program is more than the articulation of policies and management approaches; it is a set of procedures and institutional arrangements to carry out the program and thereby attain the stated goals and meet the adopted objectives.

The requirements of the Act appear to focus on process and leave the substance of the management programs to the states to define. Process can be viewed in two ways with respect to the Act:

(1) The process of developing a management program for the coastal zone.
(2) The process of management itself in the sense of operational and administrative procedures.

The Act deals with the process of program development through the establishment of various elements states must examine in structuring coastal zone management programs. The management process is presented as a set of alternatives and combinations which are available to coastal states and will result from the program development process.

It is these two process functions with which this report is concerned, with emphasis placed on the program development process. The document provides a basic interpretative discussion of the Act and the problems states should consider in complying with it.

In developing their management programs states will carry out a number of separable tasks including:

- development of basic goals and objectives for the use of coastal resources;

- development and utilization of procedures and programs to comprehend and define the coastal zone as a natural and social system in terms of its resource attributes and its capacity to assimilate the impacts resulting from various uses;
- formulation of basic policies to evaluate proposed uses of coastal resources in terms of program goals and objectives; and
- adoption of necessary legislation, regulations, and organizational arrangements to implement policies which control or otherwise guide the development of coastal zone resources.

The policies a state formulates as part of its management program can serve a variety of purposes: first, they might help guide the selection of allowable coastal zone uses through the determination of permissible uses; second, they might help select preferences in allocating resources through the determination of priorities of uses; third, they might help determine to what degree the adopted objectives can be met; fourth, they might help design the organizational structure necessary to implement the policies through determining the types of manpower and programs required; fifth, they might help identify areas requiring special attention through the determination of geographical areas of particular concern; sixth, they might help guide the formulation of formal and informal linkages among the agencies and units of government at all levels with responsibilities and mutual concerns about the coastal zone.

3. Study Objectives and Approach

The study effort reflected in this document was carried out with the objective of providing a substantive analysis of the key factors involved in formulating state programs which effectively manage the coastal zone--within the context of the Coastal Zone Management Act of 1972. It is designed to present in an understandable form an in-depth discussion of the various elements of the Act and attendant regulations that the coastal states must consider in developing their coastal zone management programs.

The authors have used examples extensively to reinforce various points made throughout the text. These examples are presented to allow readers an opportunity to benefit from state experiences with regard to certain points. In all cases the examples show situations where states have proceeded without the benefit of federal guidance, and as a result their actions might not comply with the Act's requirements. With this in mind, readers should review the discussion of examples in light of the guidelines set forth in the Act and attendant regulations.

The document was prepared for a varied audience and was designed to serve a different function for each segment thereof. For state and local government officials it can serve as a means of gaining clarification of the federal requirements, seeing how certain other states have handled certain problems, and identifying other sources of the most up-to-date information available. For elected officials it can serve as a reference guide to help in reviewing legislative proposals pertinent to coastal zone management. For the academic community it can serve as a reference document for classwork and for research in coastal zone management, law, administration, and public policy. For special interest groups it can serve as a guide to use in articulating their interests and perspectives of coastal zone management. Finally, for the general public it can serve as a reference to help them develop an understanding of the principles of coastal zone management and how it might affect them and their lifestyles.

Since the contents of this document deal quite specifically with the major individual elements of coastal zone management contained in the Act and the

attendant regulations, readers can refer to any section for an in-depth discussion of an individual area of concern to them. Also, a bibliography covering each chapter or section thereof appears at the end of the respective chapters or sections. Readers should note, however, that there are many interrelationships among the sections and chapters. For this reason the authors suggest that the entire document be read sequentially so that the readers can clearly perceive these interrelationships, although there is extensive use of cross-referencing throughout.

4. Report Content

The next chapter in this report focuses on an in-depth analysis of the substantive elements of a coastal zone management program, including boundary determinations, permissible uses, geographic areas of particular concern, and priority of uses. Section A of the chapter considers boundaries and the problems states may encounter in defining them and keeping them current with changes in programs and conditions. Section B considers permissible uses and means of assessing impacts of such uses and categories of uses. Section C considers geographic areas of particular concern, including criteria for designation and representative area types. Section D considers priority of uses, including criteria for designation and information needs.

Chapter III focuses on authority necessary for and possible organizational structures of the state management programs. Section A of the chapter considers the means of exerting control, including the adequacy of existing and proposed state laws. Section B considers the organizational structure states might use to implement their programs and includes a discussion of the roles of various entities involved and problems to consider in designing the organizational capabilities. Section C considers cooperation and coordination with federal programs both during the program development effort and after the program has received federal approval.

Chapter IV focuses on the use and organization of information in the state's program development effort. This includes a consideration of the types of information needed, the use and sources of existing information, and the means of organizing information.

Chapter V focuses on public participation in the state's program development effort. This includes a discussion of the uses and limitations of public hearings as tools, problems inherent to public participation, and participation techniques.

Chapter VI focuses on estuarine sanctuaries and their relationships to a state's management program. This includes a discussion of natural ecological units, permissible and prohibited uses, and factors to consider in delineating the sanctuaries as well as their roles in the state's program development and implementation efforts.

The appendix of this document is divided into three parts which are included to enhance the report's value as a reference source. Part A of the appendix includes a state and regional bibliography which presents a selective and representative listing of documents organized according to the state or region upon which they focus. Included in the listing are planning documents, coastal resources inventories, discussions of existing state and regional programs , bibliographies, and discussions of specific coastal-related problems. Part B of the appendix includes a copy of the Coastal Zone Management Act of 1972 and the rules and regulations proposed or promulgated under various sections of the Act. These include the rules and regulations promulgated under Section 305 of the Act; those proposed under Section 306 of the Act; and those promulgated under Section 312 of the Act. Part C of the app-

endix presents a representative listing of federal activities and programs which focus on the coastal zone. These activity listings are organized in three broad categories: financial and technical assistance, covering the government's domestic assistance function; regulatory and licensing, covering the government's regulatory and licensing function; and direct action; covering the government's management function.

CHAPTER II
SUBSTANTIVE ELEMENTS

A. Boundaries

1. Introduction

Section 305 (b) (1) of the Coastal Zone Management Act stipulates that each state's management program include "an identification of the boundaries subject to the management program". The areas these boundaries delimit will constitute the state's coastal zone for management purposes.

Section 304 (b) of the Act defines the coastal zone as "...the coastal waters and the adjacent shorelands...strongly influenced by each other and in proximity to the shorelines...." Further, "The zone extends, in the Great Lakes waters, to the international boundary between the United States and Canada and, in other areas, seaward to the outer limit of the United States territorial sea. The zone extends inland from the shoreline only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on coastal waters...."

In determining the coastal zone boundaries for which Section 920.11 of the rules and regulations calls (these were adopted under Section 305 of the Act), states will also have to consider determining both permissible uses (920.12) and geographic areas of particular concern (920.13). Those permissible uses which may have a direct and significant impact on the coastal waters can help states determine the boundaries of their management programs. The extent of some of the geographic areas of particular concern may affect the location of the inland limit of the coastal zone for management purposes.

Those states that plan an estuarine sanctuary (Section 312 of the Act) should consider the sanctuary as they determine their coastal zone. Section 921.6 (a) (2) of the rules and regulations promulgated under Section 312 of the Act states that the area of control associated with the sanctuary must be adequate to protect the estuary.

For many states the process of defining their coastal zone will be an iterative one. A broadly defined area that a state may adopt initially for planning purposes could be modified during the program development process to include only those areas pertinent to the final management program. The tasks involved in this definition process should address a series of questions that the states might ask:

- What are the major problems that seem to relate to the state's land/water interface area (e.g., filling of wetlands, public access, habitat protection)?
- What are the natural systems associated with these problems?
- What are the jurisdictional units associated with these problems?
- How large a planning area is adequate to allow the state to consider fully the major problems and the associated systems and units?
- Do any of the problems within the planning area need immediate attention in the form of interim controls?
- If these problems do require interim controls, what portions of the planning area are involved and where are their boundaries?
- What are the existing and anticipated permissible uses which cause or could cause direct and significant impacts on the coastal waters? (For discussion of this, see Section B of this chapter, Permissible Uses.)
- Where are any geographic areas of particular concern? (For discussion of geographic areas of particular concern, see Section II C, Geographic Areas of Particular Concern.)
- What organizational arrangements will the state use to carry out the coastal zone management program?

- Should the planning area be modified to reflect the requirements of the management program, and if so, to what degree?
- What monitoring will be necessary to provide the data base to modify the coastal zone boundaries if this is necessary after the state has adopted its management program (e.g., changes in environmental conditions)?

The diversity of the natural, institutional, and legal characteristics among the coastal states means that each state's answers to these questions could vary widely. And because some states have progressed further in developing coastal zone management programs than have others, these states will already have answered some of these questions.

The next part of this section discusses the approaches existing state coastal resources-related programs use and the possible applicability of these to coastal zone management. Part 3 discusses the requirements of the Act that the states must consider in determining their coastal zone boundaries. Part 4 discusses some of the problems that the states might face in determining their coastal zone boundaries. Part 5 discusses the rationale for designating planning areas. Part 6 discusses the technologies and techniques associated with boundary determination and delineation. Part 7 discusses the possibilities of changes in boundary locations after a state enacts or adopts a management program.

2. Existing Programs

Some coastal states have accumulated extensive experience in determining boundaries during their efforts to implement state-level coastal resources-related programs which they established before the Coastal Zone Management Act became law. All states can benefit from reviewing earlier boundary determination methods which are part of these programs. These include using natural or cultural features, jurisdictional units, demographic units, and distance offsets from baselines:

- The Delaware Coastal Zone Act (Act 175 of 1971)[1], for example, uses the system of coastal highways (which approximate the ten-foot contour) to delimit the coastal zone.
- The Oregon Beach Bill (Act 601 of 1967)[2] uses the permanent vegetation line to define the inland limit of the zone of control.
- The Texas Natural Resources Interagency Council Comprehensive Coastal Study (Senate Concurrent Resolution #38)[3] uses the political boundaries of Texas' coastal counties to define the landward limit of the study area.
- The Wisconsin Water Resources Act of 1965[4] defines the zone of control to be all lands within 1,000 feet of a water body or stream, or the landward side of the floodplain, whichever distance is greater.
- The Florida Coastal Coordinating Council (Act 259 of 1970)[5] defines a planning area by the boundaries of the census enumeration districts within which the 100-year floodplain is located.

Each state, then, chose or will choose a boundary that satisfies the criteria of the programs involved--but these boundaries do not necessarily meet the objectives and requirements of the Coastal Zone Management Act. Therefore, to determine the applicability to the Act of boundaries it had adopted earlier, each state should assess both the criteria it uses and the way it applies the criteria in its delineation process.

The delineation process is neither static nor universally applicable to all situations. The coastal states can benefit both from one another's experiences and from earlier efforts in their own states. States, however, should consider two points before they build on these earlier efforts. First, before a state adopts a boundary that uses an existing technique, it should identify and assess carefully the criteria it used before and the context within which it applied these criteria to test the adequacy of transferability. Second, a state should

also assess the technique's effectiveness by checking for boundary modification during the lives of the programs and the reasons for the modifications when they have occurred. Although earlier experiences can be helpful, each state should also realize that it should only use these approaches when the existing programs are able to deal not only with the similar boundary-related problems, but also with dissimilar ones.

Experiences Massachusetts and California have had are cited to clarify these points.

The Massachusetts Coastal Wetlands Act (Chapter 768 of 1965) was enacted to protect marine fisheries and public health and welfare. The boundaries that define the zones of control are generally tied to natural features (saltmarsh, contiguous freshwater wetlands, barrier beaches, and tidal flats[6]) which are defined by natural characteristics (e.g., vegetation, soil types). The limits of the zones of control have been extended during the life of the law as the knowledge of the interrelationships of the areas has been expanded. Initially, the zone of control was limited to the saltmarsh and its boundaries were determined by vegetation.

But after the state began to implement the Act, it became apparent that the zone of control should be expanded to include all critical elements of the system (e.g., contiguous freshwater wetlands, barrier beaches, and intertidal flats). The state reviewed the situation and determined that new criteria should be developed. In the case of contiguous freshwater wetlands, the state determined that these should be included proceeding upstream until a barrier or other discontinuity appeared in the rivers or streams. The state also determined that the long-shore limit of the barrier should be defined by a line which is tangent to the limit of the marsh or wetlands and intersects the shoreline at that point which is closest to the tangent point. Because this was landmark legislation in the field, the flexibility to modify the zone of control to better control the problems has been important. And an advantage of using these kinds of features to define the zone of control is that it allows a state's program to deal with complete environmental systems. The disadvantage of this approach, however, is that it does not consider institutional units (e.g., local political units with a shared resource) and this could cause fragmentation of certain jurisdictional responsibilities.

The California Coastal Zone Conservation Act of 1972 (Proposition 20) was enacted to protect and to enhance the coastal resources of California and to control development which could adversely affect these resources. The landward boundary is a specific distance (1,000 yards) from a predetermined baseline (approximation of mean high tide line); this boundary defines a zone of interim control while the state plans within a larger area. The state established this boundary on the recommendations of the California Comprehensive Ocean Area Plan (COAP)[7]. Planners considered several aspects of the problem of boundary determination before adopting this method. A general inspection of the state's coastal area indicated that most of the conflicts occurred within one-half mile of the coastline and no natural features (e.g., contours, ridgelines) existed there that could serve as limit markers. Many interests, including local governments, opposed an extensive state management zone. Finally, the California Department of Parks and Recreation made a separate study[8] which became an element of COAP; this study used an inland boundary one-half mile from the coastline.

The use of a specific distance to delimit the coastal zone offers the benefit of treating owners equally within the same proximity of the shoreline, but one drawback is that these boundaries do not necessarily correspond to natural systems or jurisdictional limits. This might mean, for example, that a problem with environmental consequences could be transferred from one location to another

within the system or jurisdiction.

These examples show quite different approaches which two states elected to use. It is important to reaffirm here that the translation of boundary determinants from one program or one state to another should only be done with full knowledge and understanding of the bases of these determinants and consequences that can result.

3. Requirements of the Act

Each coastal state will need to define a coastal zone for management purposes the scale of which is adequate to deal with the problems that are arising or are anticipated to arise as states comply with the Act. It is expected that most states will identify initially a boundary for planning purposes while they examine the issues and problems associated with defining the coastal zone boundary for management purposes (see part 5 of this section, Determining a Planning Area).

The act has two requirements each state must consider in determining its coastal zone. First, the zone should extend inland only so far as necessary "to control shorelands the uses of which have a direct and significant impact on coastal waters". Second, the limit of coastal waters within an estuary must be defined by a "measurable quantity or percentage of seawater".

Impact significance and directness: The Act stipulates that only those uses which have both a direct and a significant impact on coastal waters should be included in states' determination of which shorelands they should include in their coastal zone.

As each state formulates its management program, it must determine what constitutes direct and significant impact. This determination will help states adopt policies for its coastal zone and enable it to identify those shorelands the uses of which will require controls. Therefore, most states will probably need to initiate varying levels of scientific and legal research into the question of direct and significant impact. These discussions should help in this effort.

An impact is the result of an action which generates a change in some element of a human or natural environment. The bases for determining future changes will be--at least in part--an evaluation of the existing states of the environmental elements under consideration. An element of the human or natural environment can be one of three categories: biological (including subcategories--human, animal, plant); physical and chemical (including indicators which show changes in air, land, or water characteristics); and social (including impacts on communities as well as on individuals).

The directness of an impact is associated with the cause of the change(s); the environmental modification must not result from an intervening action if the impact is to be defined as direct. In the context of the Coastal Zone Management Act, then, an impact may be interpreted to be direct when, for example, it causes a change in the characteristics of the coastal waters.

The question of what constitutes the different characteristics of coastal waters (and thus are indicators of change) will be subject to several interpretations. Some states will prefer a narrow interpretation of direct when considering the Act's requirements. They might, for example, consider:

- physical characteristics--e.g., circulation patterns, temperature;
- chemical characteristics--e.g., salinity configuration, nutrient profiles, chemical constituents;
- biological characteristics--e.g., biotic types or diversity, viability of biophysical environment; and
- littoral characteristics--e.g., erosion or accretion patterns.

Other states will choose a broader interpretation of what constitutes a charac-

teristic of the coastal waters. The might, for example, also consider

- socioeconomic characteristics--e.g., existing usage patterns of the water surface, water body, or underlying terrain; and
- aesthetic characteristics--e.g., sensory experiences.

The potential disparity between these interpretations is the result of the lack of precedents in determining impact directness. Each coastal state will want to develop consensus among opposing interests within the state regarding directness whenever and wherever this is possible.

For impact significance, however, several judicial decisions have clarified its interpretation.[9] Impact significance is generally associated with the extent or degree of change which results from an action. The National Environmental Policy Act of 1969 addresses the concept of impact significance as presented in the guidelines adopted by the Council on Environmental Quality (August 1, 1973). These list categories of impacts, including

- an action that results in degradation of the quality of the environment;
- an action that curtails the range of beneficial uses of the environment;
- an action that serves short-term, to the disadvantage of long-term, environmental goals; and
- an action which may have both a beneficial and detrimental effect, even if on balance the net effect is deemed to be beneficial.

Other federal agencies have adopted their own guidelines to determine or to identify significant impacts. The Environmental Protection Agency guidelines (January 10, 1973), for example, use categories such as

- actions having both beneficial and detrimental effects even if, on balance, the net effect is deemed to be beneficial;
- the expected environmental impact of precedent-setting actions;
- the expected environmental impact of individually small but cumulatively large actions; and
- actions which are likely to be highly controversial.

Figure 1 shows a two-place matrix which differentiates among the four combinations of impacts discussed above. Each state must decide whether to adopt a narrow or a broad interpretation of what constitutes a direct and a significant impact. With this interpretation as a basis, the state can then adopt specific indicators and measures for the characteristics of its coastal waters (to determine impact directness) as well as specific categories of impacts (to determine impact significance).

For example, consider an estuary and its associated watershed within which a state must define a coastal zone. Pressures from representatives of different utilization plans might result in conflicts, either real or anticipated. A recreation area (including a marina, beaches and swimming areas, and fishing piers) might well be located there. The area might also be under pressure for residential development with proximity to the recreational facilities. Planners might also anticipate pressure from commercial development associated with the residential and recreational uses (e.g., shopping centers, boatyards). Conservation interests might maintain that the area should be conserved as a natural system. Finally, industrial developers might bring pressure to take advantage of the coastal location and the potential labor force residing there.

A state confronted with a problem like this will have to determine which of these uses will have a direct and significant impact on the coastal waters and which will therefore require the associated shoreland to be included in the coastal zone.

Figure 2 shows an estuary being impacted by a variety of uses. The effluent from the water supply facility could have a direct and significant impact on the coastal waters of the estuary. The same could be true of the impacts resulting

IMPACT MATRIX

	DIRECT	INDIRECT
SIGNIFICANT	Those situations where an action modifies the identified characteristics of a state's coastal waters and the attendant impact falls within one of the categories of impacts that a state uses to determine significance.	Those situations where an action may modify the identified characteristics of a state's coastal waters, but the modification is caused by some secondary reaction as opposed to the primary action even though the resulting impact might fall within one of the categories of impacts that a state uses to determine significance.
INSIGNIFICANT	Those situations where an action modifies the identified characteristics of a state's coastal waters, but the attendant impact does not fall within one of the categories of impacts that a state uses to determine significance.	Those situations where an action does not modify the identified characteristics of a state's coastal waters, nor does the action result in an impact that falls within the categories of impacts that a state uses to determine significance

FIGURE 1

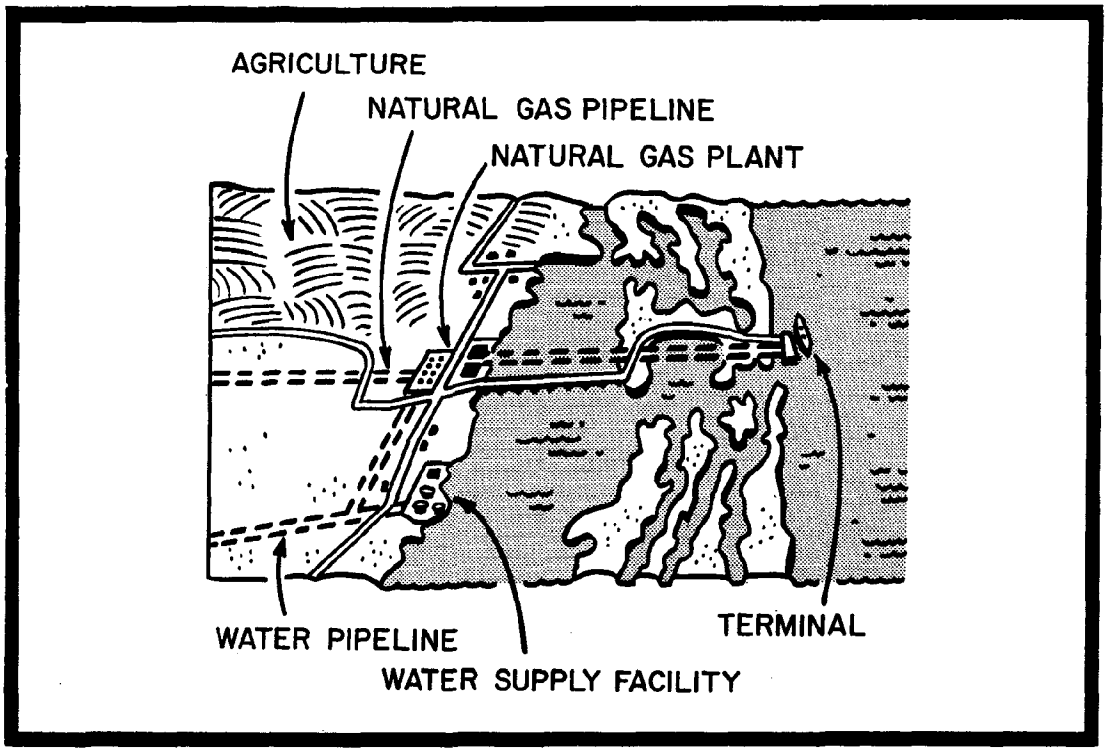

FIGURE 2

from the natural gas plant and its associated pipeline and terminal facilities; a somewhat simplified example of a complex system composes of many components. Finally, the runoff from the agricultural area might also cause direct and significant impacts on the estuary.

In resolving which uses to include in defining its coastal zone the state should identify all systems the components of which cause direct and significant impacts--as in the natural gas operation shown in Figure 2. Once such systems are identified states should determine to what degree the entire system should be included within the defined coastal zone.

For discussion purposes, consider three categories of use--conservation, recreation, and industry:

First, conservation use of the area might be an alternative: maintaining or enhancing its natural resource characteristics or attributes. A state will need to determine when such a use could alter the legally-defined composition of the coastal water (e.g., enhance the biological characteristics beneficially--or beyond, to eutrophication) or curtail other beneficial uses of the area or if the use could result in a direct and significant impact on the coastal waters.

Second, additional recreation use of the area might be a possibility when the natural resources' attributes could offer users a variety of recreation experiences. The coastal state will need to determine which of the specific recreational uses will have a direct and significant impact on coastal waters--based on its adopted criteria.

Third, industrial use of the area could broaden the economic base if the area were economically depressed. The state will need to apply its impact criteria carefully here or adopt performance standards to ensure that any impacts resulting from the development will not be direct and significant to an unacceptable degree.

Additional discussion related to these concepts appears in the sections on permissible uses, geographic areas of particular concern, and priority of uses.

In most cases states will not have much difficulty designating those uses with direct and significant impacts once they have adopted the criteria and measures to use as determinants. In some cases, though, the designation process may become more difficult, especially when a borderline case is involved.

For example, cumulative impacts will often have a bearing on both the significance and the directness of an impact (e.g., the recreational use of a shellfish bed may tend to deplete the resource over time if the users do not understand the effect of their actions). And the intensity of a use may affect determining whether its impact is significant (e.g., residential development at one unit per acre will probably result in different water runoff rates from the same type of development at six units per acre, unless standards are adopted to control this increased runoff).

With these problems in mind, states should attempt to develop guidelines that will present explicitly their interpretations of impact directness and significance as these pertain to the activities in their coastal zones and will also define the characteristics of the indicators they choose to identify impact directness as well as categories of significant impacts. If they do this, the states will remove much uncertainty in their interpretations, and landowners will know the requirements involved in developing their shorelands.

Measurable quantity or percentage of seawater: Determining the limit of coastal waters within an estuary, and thus determining the limit of the coastal zone for management purposes within that estuary, is an implied requirement in the Act. "A measurable quantity or percentage of seawater" will be subject to a variety of interpretations, depending upon the degree of precision necessary to define the upstream boundary within an estuary. Each state must determine

the criteria to use and then apply these equitably to all its estuaries.

The classification of these coastal waters by chemical constituents is complicated by the highly variable factors that affect the measurements; among these,

- the variability of terrestrial runoff over time;
- the variability of climatic conditions over time;
- the variability of tidal ranges and stages of the tide;
- the variability of point sources (e.g., cooling water from power plants);
- the variability of activities upstream of the limit of the estuary that affect riverine flow rates; and
- the modification of circulation patterns by dredge and fill actions.

These factors, and others less significant, will affect the linear extent of coastal waters in the upper reaches of an estuary. (For more detailed discussion on methods of determining the limit of coastal waters see John Clark, Coastal Ecosystems: Ecological Considerations for Management of the Coastal Zone, available through the Conservation Foundation, Washington, D.C.)

4. Boundary Determination Problems

In addition to meeting the Act's requirements, many coastal states will be confronted with different specific practical problems they will have to resolve. To define the boundaries of its coastal zone, the state should develop answers to six questions that follow from the eleven questions posed in the introduction to this section:

- What are the problems associated with the state's coastal area with which the state's coastal zone management program will deal?
- Which of these problems do existing state programs already address?
- What are the geographical boundaries of the areas these existing programs cover?
- Are these areas adequate for the existing programs to solve the problems effectively?
- If the areas are inadequate, how should they be modified?
- What additional areas would be needed to solve those designated problems existing programs do not deal with?

The answers to these six questions will enable the coastal state to define a coastal zone that will allow existing programs to merge into a framework for the state's comprehensive coastal zone management program.

Many states will also be confronted with other related problems that may complicate their boundary determinations. The Act recognizes the diversity of the natural areas and the complexities of existing developmental, political, and administrative realities in and among the states. This recognition allows each state the necessary freedom to address the sets of complicating factors that are pertinent to its situation. Recognition of the importance of natural systems, social communities, legal adequacy, displacement effect on development, and equal treatment of land owners are among some of the problems with which states will have to deal. Certain problems will pertain to all coastal states; others may be unique to one.

Recognition of natural systems: To define its coastal zone, then, each state will need to develop an understanding of the natural or environmental systems that exist within its broadly defined coastal environment as well as the linkages and interrelationships among the systems. The environmental system will vary according to the natural characteristics of each state, but might include coastal watersheds, estuaries, atolls, and submarine canyons. The environmental systems of the coastal environment lie in one of three zones: open water (seaward of the normal shoreline); estuarine (as defined by the Act); and shorelands (landward of the normal shoreline)(Figure 3). Within the open water

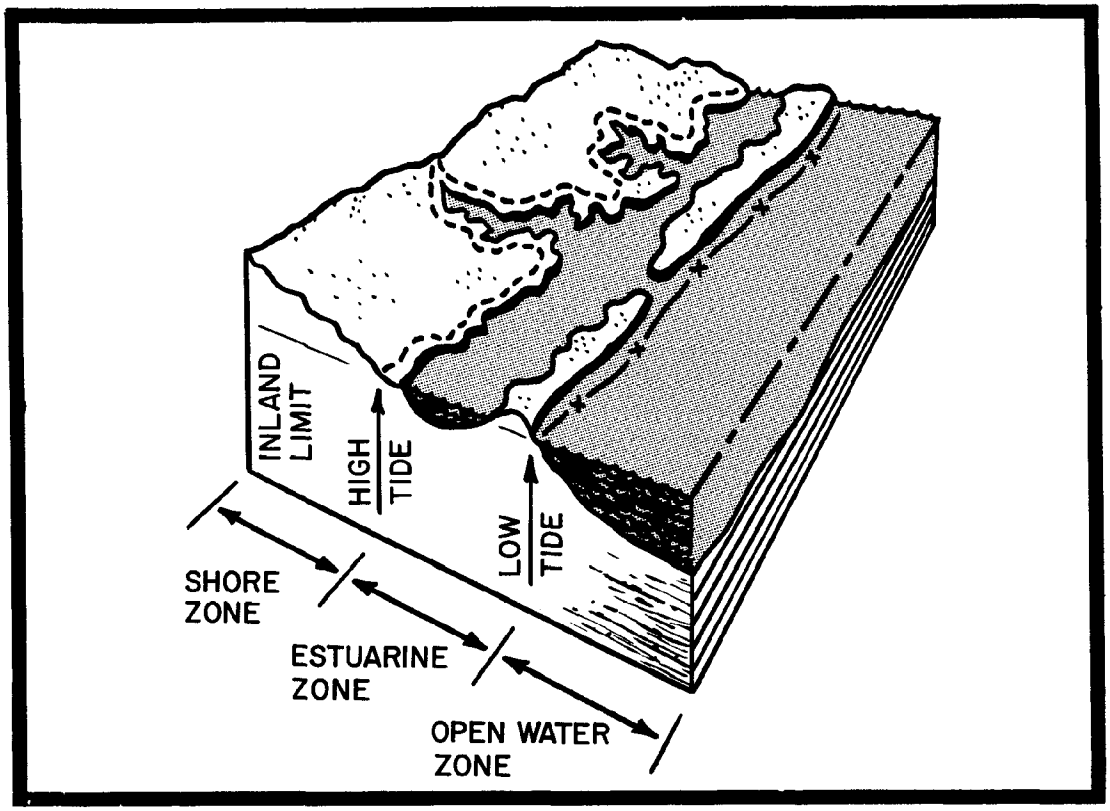

FIGURE 3

zone the environmental systems include several separable subsystems, among which are littoral regimes, habitats, submarine canyons, and biotic or vegetative anomalies. In the estuarine zone the system and the zone are the same. The shorelands encompass various natural systems (e.g., river basins, watersheds, habitats). The geographical limits of these natural systems can be delineated through the use of indicators of the composition that make the system separable or definable (e.g., ridgelines separating watersheds that are representative of topographic characteristics). These systems are directly linked by air and water and are affected by natural phenomena as well as by the actions of components of social systems (e.g., resource extraction efforts). Problems that coastal states must address are: which of the natural systems, or elements thereof, require an active management program, what must this management program include, and what steps must the state take to reconcile the natural and institutional systems to ensure an effective program?

Recognition of jurisdictional units: Three types of jurisdictional units may exist in a state's coastal area and therefore should be considered in the state's determination of its coastal zone boundaries. In most cases these units will not be unique to the coastal area and in many cases will cover or share the natural systems. The jurisdictional units include substate units of government, regional planning bodies, and special purpose districts (e.g., park districts). A coastal state will need to differentiate among the units to decide which it should include in the program development effort and to what geographical extent the units chosen should be included in the coastal zone.

One example of a special purpose district is a waste disposal system that collects, treats, and disposes of sewage from a specific geographical or service area. This system can be large and complex (e.g., separate components and

facilities for storm water, domestic, commercial, and industrial sewage) and a state will need to determine, based on direct and significant impact on coastal waters, which of the components it should include in the coastal zone. It will serve little purpose to include those components, and their associated uses, which do not cause such impacts unless a fragmentation of the system results which will adversely affect the total system; for example, requirement to relocate the outfall of a treatment facility.

Unless states consider them carefully, the variety of jurisdictions covering coastal areas may conflict with any attempt to develop a comprehensive coastal zone program. States will need to reconcile the disputes within and among government units these conflicts cause to ensure that the coastal zone for management purposes, as the state chooses to define it, is adequate to deal with these problems. If it is not, conflicts between the jurisdictions will have undesirable consequences on the effectiveness of the state's coastal program.

In most cases the boundaries are associated with a series of independently established programs. The Massachusetts coastal wetlands are an excellent example of a situation where a specific area is presently controlled and protected by numerous jurisdictions at the local, state, and federal levels.

Local zoning jurisdictions include those of the planning boards (land use) and the conservation commissions (wetland areas). Local licensing or permitting jurisdictions include the boards of selectmen (building permits), boards of health (sewage disposal and water supply), boards of appeals (substandard or nonconforming uses), conservation commissions (wetland regulations), and the planning boards (subdivision control).

State zoning jurisdictions include those of the Department of Natural Resources (Coastal Wetlands Act). State-level permitting or licensing jurisdictions include those of the Department of Natural Resources (overview and intervention of local sewage disposal control), and the Division of Waterways (submerged lands regulations).

Federal-level permitting or licensing jurisdictions include those of the U.S. Army Corps of Engineers (control of navigable waters) and, in some cases, the Environmental Protection Agency (water quality control), and various agencies under the National Environmental Policy Act.

Most of the conflicts a state must resolve will result from differences in the judgements of what uses are suitable and reasonable and what is the best path through the labyrinth of jurisdictions. The Massachusetts example illustrates a problem many coastal states will face where ad hoc approaches have resulted in complex jurisdictional configurations.

Obviously, many of the jurisdictional interests will differ in their determinations of what the coastal zone should include for management purposes. Each state, in this situation, will have three reasonable alternatives.

First, the coastal zone boundary could define an envelope encompassing the interests of all jurisdictions. If a state selects this approach it is imperative that it formulate mechanisms to ensure the necessary coordination among the jurisdictions involved.

Second, the boundary could reflect jurisdictional exchanges in ways that the need of the most pertinent jurisdictions (which would differ according to the resource types involved) would govern boundary locations. Ths approach would require a careful evaluative judgment to determine which should be the controlling jurisdictions.

Third, the jurisdictions involved could work out a compromise based on a consensus among them. These compromises would consider various factors (e.g., the areas to be controlled, the need for additional active management, and the political realities of existing programs). The compromises would require ex-

tensive negotiations.

Recognition of social communities: Many types of socioeconomic groups occur in (but of course are not limited to) coastal areas that states can categorize as social communities. Income level would obviously be one group indicator, as would kinds of occupation.

Ethnic origin is another social community indicator. Often, these communities are social anomalies; for example, the Wampanoag Indian community in Gay Head, Marthas Vineyard; the Louisiana Cajun communities; and the settlement of Moors in Delaware.

Commonality of interest may be another indicator of a social community. A coastal example of this is the watermen of Chesapeake and Delaware Bays whose occupations dominate their communities and who are completely reliant on direct access to the water bodies for their livelihoods. Non-urban communities that rely on commercial fishing are also examples.

A state may wish to consider these and similar social communities in its boundary determinations if it anticipates that the management program or other related influences will divide or undermine existing communities. For example, low-income groups that have historically lived in coastal areas may be forced to relocate outside the coastal zone if they cannot meet the costs associated with the new regulations, while their non-coastal neighbors in the same income bracket would not be affected (e.g., a problem of social equity). A state may have to choose which of the social communities to include and which to exclude from its coastal zone. Discussion relevant to these choices is included in the section on geographic areas of particular concern. Surveying public attitudes (discussed in Chapter V, Public Participation) may also help the state define these social communities.

Conflict representations: States should consider existing or potential conflicts which result from the allocation of resources among competing demands and other associated factors. These conflicts can be related to impact significance and impact directness and their function in determining permissible uses (see Section II-B). By assigning geographical limits in these cases and using map overlays, states should be able to define a coastal zone which is adequate to deal with these kinds of conflicts. Figure 4 shows an example of this approach in three different categories.

First, states could determine boundaries in ecological conflicts by delineating certain natural components of the coastal watershed (e.g., wetlands, habitats, stands of trees). Second, they could determine boundaries in socioeconomic conflicts by delineating certain jurisdictional areas within the coastal watershed (e.g., service areas). Third, they could determine boundaries in aesthetic conflicts by delineating areas with aesthetic potential (e.g., historic or cultural sites, zones of high visual experience). States could use these and other comparable delineations to represent and to study existing or possible situations for conflicts and controversies. By designating areas of mutual concern under overlapping jurisdictions, states will be able to identify commonalities and thereby define coastal areas that will require active management.

When states use these techniques to delineate coastal zone boundaries, they should consider that the following problems may arise: First, it is sometimes difficult to identify the cause or causes of conflict and thus difficult to define it geographically, because the conflict will generate not just information, but also misinformation. Second, changing public attitudes towards certain geographic or jurisdictional areas could have to be reflected in drastic boundary changes. Third, certain boundaries may only be established and conflicts resolved through (time-consuming) administrative or judicial action. This

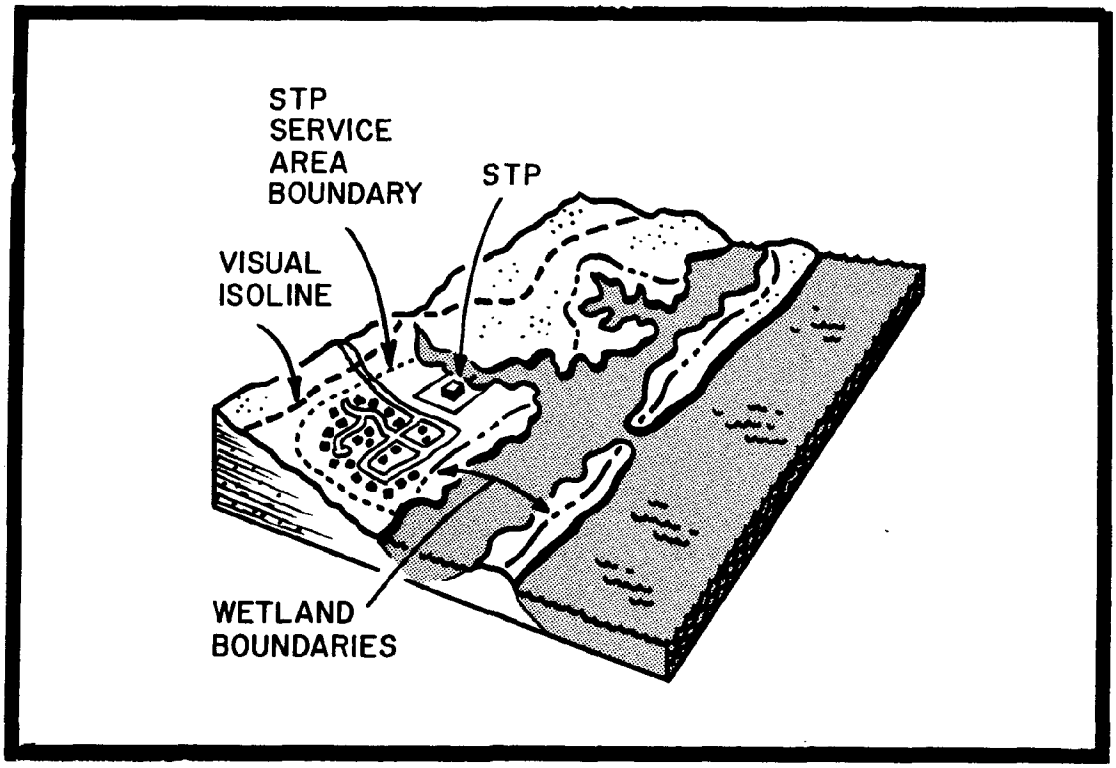

FIGURE 4

third problem is discussed in some detail in a recent Louisiana report.[10]

Knowledge of local conditions: Some states may be confronted by situations where knowledge about local conditions, knowledge sometimes not readily available at the state level, will help them determine their coastal zone boundaries. Often this information will be available through local officials or agencies, academic or research institutions, special or public interest groups, or knowledgable local citizens. If these states were to modify their coastal zone boundaries, to reflect this valuable information, this could help improve the states' effectiveness in resolving problems and might also increase the states' programs' local credibility. However, states must use this information with caution to avoid having their coastal zone programs embroiled in backyard controversies. Massachusetts has used this kind of information effectively in determining the areas which the state will manage under its Coastal Wetlands Act (these areas have included saltmarshes, contiguous freshwater marshes, and barrier beaches).

Impacts caused by influences beyond boundaries: Coastal states should realize that wherever they draw their boundaries, they will still have to deal with activities that occur outside these boundaries, activities that will have a significant impact on their coastal waters. Rhode Island's Coastal Resources Management Council Act of 1971 is an example.[11] In some cases these external influences will be beyond the control of the jurisdictional unit which is responsible for controlling that kind of activity in the state's coastal zone. River basin systems and their influences on the composition of the coastal waters--for example, a pollutant load introduced into an estuary[12]--would be one case. In those cases where the cause of the external influence is in the same state as the area affected, a state should work out cooperative agreements between or among the jurisdictions involved (e.g., coastal zone authority and water quality authority).

Interstate boundary consistency: Two states that share a common political boundary will probably have problems if substantial disparities exist in the locations of coastal zone boundaries at their common political boundary. When a shared resource is involved and the coastal zone boundaries are not compatible or similarly derived, then the difference in degrees of use of the shared resource can have an adverse impact.[13] Even when shared resources are not involved any substantial discontinuity in the coastal zone boundary at the states' boundaries can result in the displacement of future development into the state with the narrower zone.

Inland displacement effect: Coastal states may face a series of problems involving relocating developments outside their coastal zones. They may experience this problem in one of three ways:

First would be the phenomenon of over-the-boundary-boom--where future development locates just beyond the boundary of a state's coastal zone, but still is close enough to the coastline to profit from the location. In those situations where the development occurs in a sensitive area adjacent to the coastal zone boundary, the related activities might still have an impact on the coastal waters. Each state should carefully consider the feasibility of including such contiguous areas (e.g., unique landforms, freshwater wetlands), or it should work out cooperative arrangements with other state agencies which have jurisdictions in these areas.

Second, the development may locate in an adjacent state with a more narrowly defined coastal zone. In those situations where a shared resource is involved (e.g., an estuary, a wetland) problems might transfer into the state with the wider coastal zone. For this reason states should seek interstate coopererationto eliminate substantial discontinuities in coastal zone boundaries at their common political boundary.

Third, the development may locate in the interior of the state in a place with comparable resource attributes (e.g., from an ocean shore to a lake shore). In this case the state may still have problems, but not have their coastal waters impacted. To deal with such potential problems, a state may wish to establish state-wide land use controls or utilize some other means of control and coordinate these activities with its coastal zone management program.

Availability of data: The existing data base in each state will have geographical boundaries associated with it. The state will have to consider each data component (e.g., environmental, socioeconomic, demographic) separately and break it down into coastal and non-coastal elements.

States may wish to determine time and cost-effectiveness involved in keeping the data components intact versus attempting to subdivide them. Florida, for example, opted for the former when it defined its coastal zone by census enumeration districts.[14] (For related discussion, see Chapter IV, Organization and Use of Information.)

Equal treatment: Each state should define its coastal zone using criteria which will allow it to define boundaries uniformly and consistently to assure that it treats all similarly situated property owners similarly.

Legal adequacy: Each coastal state must address the problems associated with the question of how accurately to define its coastal zone boundaries. It must research carefully existing legal requirements and constraints to determine either their adequacy or the need to modify them.

Both people subject to the state's management program and the state's enforcing agency should be able to tell whether or not a piece of property is in the defined coastal zone. The importance of this legal adequacy problem in delimiting the coastal zone will be determined by existing legislative policies along with legislative policies and judicial decisions and interpretations.

In Massachusetts, for example, the state and its political subdivisions are authorized by Chapter 222 of 1967 to use thematic maps without metes-and-bounds descriptions[15] to depict areas with natural boundaries; these thematic maps may then become legally definitive documents at the registry of deeds and in a court of law. Connecticut, on the other hand, is required by law to conduct geodetic surveys and monument boundaries that approximately cover the limits of the natural areas (Act 695 of 1969).[16]

Permanence of boundary indicators: Many states will face a variety of problems involving geographic and cartographic representations of the coastal zone boundaries. In some situations a boundary which is determined to define the coastal zone for management purposes might be unrealistic administratively unless it can be easily reproduced on the ground. In other situations, especially when natural factors are used, boundary indicators might be subject to short-term fluctuations or to long-term changes of natural phenomena. Situations might occur where conditions are modified which serve as a frame of reference in boundary definition.

To avoid these problems, a state might well choose to use physical or cultural features or some other indicator which approximates the desired boundary to define the limit of its coastal zone. In Delaware, for example, the boundary the state desired corresponded to the ten-foot contour so that the state, in legally defining its coastal zone, chose its system of coastal highways (i.e., a cultural feature) which approximated the contour.

Political acceptibility: Probably some coastal authorities will have problems in getting their state legislators to accept the coastal zone management programs they develop. In California, for example, the state assembly did not accept the recommendations of the Comprehensive Ocean Area Plan, even after much debate. The question had to be presented to the people in the form of a referendum--which passed handily.

In most cases, one of the key elements of the problem will be the scale of the area the agency determines is necessary to control coastal impacts. To mitigate this type of situation state agencies should adopt two policies: first, they should involve legislative representatives from the beginning as members of advisory committees or review panels so that the legislators may offer counsel in the political realities. Second, state agencies should document all recommendations they make to the legislatures reinforcing the criteria the agencies choose to determine the coastal zone boundaries.

Cost of surveying boundaries: One cost factor that may affect the indicators states choose to delimit their coastal zones will be the expenses involved in defining boundaries. Survey costs can be appreciable, especially where extensive manpower and sophisticated equipment are required to define boundaries. For example, New Jersey spent a large amount of funds in mapping certain areas governed by its Wetlands Act of 1970. Also, when extensive shorelines are involved, survey costs can become excessive when metes-and-bounds surveys are required as part of the delineation process. There will be a direct relationship here among the boundary indicators chosen, legal accuracy required, and the cost of surveying the boundaries (e.g., in a saltmarsh, using interpretation of aerial photographs vs. vegetative indicators of mean high water).

Cost of administering program: States with extensive shorelines will have to assess the extent of manpower and funds necessary to regulate uses within their defined coastal zones. The costs involved in regulating a variety of actions within a broadly defined coastal zone may be high. Distributing these costs will depend on allocations of management responsibilities, but states must also realize these costs can affect how they define their coastal zone boundaries. They may have to make trade-off decisions among the scale of the

coastal zone for management purposes, the scope of control, and the allocation of responsibilities.[17]

Exclusion of areas: States will have situations where it is necessary or advisable to exclude certain areas from what they might otherwise include in their coastal zones. For example, they must exclude, by law, all federally controlled areas.

Many states will have to deal with federal agencies in potential conflicts which may affect the location of the states' coastal zone boundaries. First, because of the Act's exclusionary clause, situations will arise where boundaries of federally controlled lands bisect a resource--a wetland or other habitat. If there is a conflict over the uses of the shared resource (e.g., filling a wetland vs. keeping it as a habitat), then the state and the federal agency should resolve it before the state adopts a final coastal zone boundary in that area. Second, the existing federally-owned property that the controlling agency is classifying or might classify as surplus could generate a variety of conflicting interests. If the state considers the federally-controlled area, in part or in total, as a resource that it would otherwise include in its coastal zone, then the state should try to determine what the final disposition of the area will be before it declares its management boundaries.

For the same reasons, states should also consider existing and planned complementary or cooperative federal/state programs which could conflict with their program's goals and objectives. To avoid, or at least to decrease this potential for conflict, states may wish to extend their boundaries so that they are in a better position to deal with such potential problems. For example, in the case of a federal energy facility siting act, certain of the coastal states may consider extending the inland limit of their coastal zones into those contiguous areas that are suitable for such uses. And in the case of a federal land use act (although there should be few if any federal-state conflict situations) most states may wish to set coastal zone boundaries for management purposes that will allow them to realize the maximum amount of assistance from both programs.

Any coastal state that anticipates these types of situations, or any other conflicts with federal agencies that will affect their coastal zone programs, should be prepared to make all reasonable attempts to resolve the problems before they adopt boundaries or any other element of their management programs. The Secretary of Commerce has the authority under the Act to withold program approval if the state has not adequately considered the views of pertinent federal agencies (See also Section III-C, Cooperation and Coordination with Federal Agencies).

5. Determining a Planning Area

As said in 920.11(a) of the Section 305 rules and regulations, "states may wish initially to delineate a planning area which generally is larger than, and encompasses the area ultimately identified as the coastal zone." Further, "State management activities...are likely to be based upon data, programs, and institutional boundaries that encompass areas larger than the coastal zone designation." In addition, Section 920.16 requires that the state has "Coordinated its program with local, areawide, and interstate plans applicable to areas within the coastal zone...." The Act's suggestion to differentiate between planning and management areas may become necessary if a state is both to deal effectively with its coastal-related problems and to ensure continuity of other related or overlapping state-wide or areawide programs.

Many states are presently involved in a number of on-going resource planning and management programs that may have an impact on the coastal areas. States

are developing state-wide outdoor recreation plans in which coastal areas play an important role. Some states are developing solid waste disposal plans which include creating special districts. Many substate units of government may be developing or might have adopted comprehensive plans which include coastal areas as an integral part of the plans. States must consider the philosophies, institutional arrangements, and geographical areas of concern of all of these programs and others like them in determining their coastal zones and in formulating their management programs.

Delineating a coastal zone planning area in most cases will be easier than defining the coastal zone for management purposes. The seaward or lakeward limit, the Act specifies, shall not extend beyond the outer limit of the territorial sea nor the lateral interstate boundaries. The limit within an estuary will normally be constrained by the definition of coastal waters in Section 304(b) of the Act or by the state's political boundary (unless there are water-related problems upstream from the limit that affect coastal waters).

Although the Act is explicit in defining the seaward limit of the coastal zone certain states will still have problems in identifying a seaward limit. For example, some states are involved in litigation over the location of their common interstate boundary within the territorial sea (e.g., Maine and New Hampshire) which could affect the legal definition. Also, the Atlantic states are involved in litigation over an extended resource zone (up to 200 miles) (i.e., Maine et al. vs. United States) because some of them claim rights under colonial charter beyond the three-mile territorial sea. Finally, outer continental shelf developments cannot help but affect states' coastal zones once they are authorized. For these reasons, some coastal states may find it desirable to consider areas between three and two-hundred miles in separate, but coordinated, programs.

For initial planning purposes the maximum limit of the shorelands may correspond to the limit of the coastal watershed to effect solutions of the major coastal-related problems (or to the state's political boundary if the problems cross state lines). States may modify boundaries, however, so they will reflect, for example, plans which have coastal components or regions or deal with many of the problems discussed earlier in this section--recognition of natural systems, inland displacement, and availability of data.

Because of the varied state approaches to coastal management, different states will have different views as to planning areas versus management areas; each state should therefore adopt an interim boundary that satisfies its immediate needs. Some states though may also find that certain problems demand immediate attention in the form of interim controls or emergency programs. Whether they adopt these controls or programs at the beginning of or during their program development efforts will depend on the kinds of problems, immediacy of needs, and pertinent knowledge available to the states.

The California Coastal Zone Conservation Act of 1972 used this approach by establishing a control zone while the state makes plans in a broader area encompassing the control zone. The California law gives the Coastal Zone Conservation Commission planning jurisdiction over an area that extends from the seaward limit of the territorial sea to five miles inland or the ridge line of the nearest coastal mountain range, whichever is the shorter distance. The law also provides for interim permit control over that portion of the planning area that lies between the three-mile limit seaward and 1,000 yards landward of mean high tide.

Geographical segmentation is another option open to states that have problems which demand immediate attention. This approach would allow a state to adopt management programs for specific areas within the designated planning

area (e.g., geographic areas of particular concern) when such action appears warranted. For more detailed discussion of this concept, see Section II-C, Geographic Areas of Particular Concern.

6. Mechanics of Coastal Zone Boundary Delineation

The study techniques and technology applications a state can use to define its coastal zone will depend on the resources available to it. Each state will probably need to formulate a study effort to determine the configuration of its coastal zone for management purposes, and it must be prepared to document its choices based on the use of its available capabilities to produce proper evidence.

Open water zone: Geodetic survey techniques can determine and reproduce the lakeward or seaward limit of the state's control (e.g., not only for the purposes of the Act generally, but also specifically for offshore mineral leases). This technique can also help to determine a datum plane (e.g., mean high water) and to define and to map geomorphic characteristics. Remote sensing technology--for example, multispectral aerial photography-- can help define resource areas (e.g., fisheries, habitats, sand and gravel sources).

Estuarine zone: Salinometers can help determine the upper limit of the estuary by measuring the extent of salt water intrusion within the estuary. Remote sensing technology--again, multispectral aerial photography, for example--can be used to define the configuration and extent of shellfish and grass beds and in combination with dyes to measure the linear extent of tidal flow. Field surveys can help establish ground truth as documentation of the aerial photographs and map the extent of vegetative and faunal indicators. Professional judgment and expert opinion are essential in interpreting data from other elements of the study program.

Shorelands zone: Geodetic survey techniques can help reproduce a predetermined baseline or physical features that are associated with the inland boundary. Various instruments can measure flow rates of the riverine systems, define groundwater profiles, measure and map phisiographic characteristics, and otherwise monitor the environment to obtain baseline data. Multispectral aerial photography can help delineate wetlands and fisheries habitats, soil types, and existing land uses. Field surveys obtain ground truth and map indicators--among them, faunal and vegetative characteristics or socioeconomic characteristics. Here also professional judgment and expert opinion should be an integral part of data interpretation and subsequent recommendations.

7. Boundary Changes

Many states may need to change their coastal zone boundaries as they implement their management programs so they can better solve their coastal problems. Changes in states' management rationales, legal and political climates, or environmental conditions should lead those states to reassess their programs to test the coastal zone configuration against the new requirements for which the changes call. States will have to make trade-off decisions during the time they formulate their coastal zone management program; they must assess the scope of the effort necessary to determine their coastal zone boundaries compared with the potential legal problems associated with any future program modifications. In doing this, they should consider many factors--among these, the state of flux of the coastal problems; using administrative orders to modify boundaries; public sentiment; and political acceptance of their program.

States should anticipate that the need for changes will occur and be prepared to recognize the symptoms associated with the needs so that they can deal with them effectively. A change in conditions within the coastal environments can be caused by any number of uncontrollable factors. Legally or politically,

judicial decisions or interpretations (e.g., boundary definitions not equitably derived); changes in public attitudes (e.g., pressure to modify areas of concern); or new legislation (e.g., energy development) will require immediate action to maintain a program's effectiveness. Administratively revised positions might result in infrastructure changes, including reallocation of responsibilities (e.g., increases or decreases in local control authority); scope of program (e.g., areas requiring management); and management techniques (e.g., emphasize incentives and de-emphasize controls), all of which will require program modifications if these changes in conditions are appreciable.

States will attain greater degrees of awareness of their coastal environments as they formulate and implement their management programs. This awareness will result from the knowledge they will acquire over time. In some cases, this greater knowledge will lead states to identify errors that were the results of inadequate information or incomplete understanding of the issues.

Increased knowledge will also allow a better understanding of the complex interrelationships among the systems that constitute the coastal environments. States should continue to conduct research to fill out the discontinuities in their data bases. The increased data bases will give the decision-makers more strength in their actions by decreasing the risks in their decisions. As states' knowledge about their coastal zones becomes more comprehensive, they will be able to reassess their coastal zone boundaries and realign them when necessary.

When they need to modify their boundaries, coastal states might select one of the following options. First, those states which anticipate substantial difficulty in gaining acceptance of future modifications may choose to include as broad an area as possible in their coastal zone jurisdiction and apply the management program more intensively in certain areas or to control certain groups of uses. The coastal authority could then modify the boundaries of these areas using administrative orders to reflect changes in conditions while the legislatively defined boundary remains the same. Second, in those states that anticipate little difficulty in revising legislatively their program boundaries, the coastal authority could opt for the narrowest possible zone for management purposes and then introduce modifying legislation when needed.

CITATIONS

1. The Governor's Task Force on Marine and Coastal Affairs, The Coastal Zone of Delaware, College of Marine Studies, University of Delaware, 1972.
2. John E. Frohnmayer, Editor, Oregon Law Review, 50(3), Part II, June, 1971.
3. Interagency Council on Natural Resources and the Environment, Texas Coastal Resources Management Program: A Comprehensive Report to the 63rd Texas Legislature, Division of Planning Coordination, Governor's Office, 1972.
4. Donald F. Wood, "Wisconsin's Requirements for Shorelands and Flood Plain Protection," Natural Resources Journal, 10(2), April, 1970.
5. Florida Coastal Coordinating Council, Florida Coastal Zone Management Atlas, Florida Coastal Coordinating Council, 1972.
6. Russell Davenport, "Massachusetts Coastal Wetlands Act and Its Worth As An Interim Planning Tool," Proceedings of the Eighth Annual Conference of the Marine Technology Society, Marine Technology Society, 1972.
7. California State Department of Navigation and Ocean Development, California Comprehensive Ocean Area Plan, 1972.

8. California State Department of Parks and Recreation, California Coastline Preservation and Recreation Plan, 1971.

9. Steven S. Ross, Editor, Environmental Regulation Handbook, Environmental Information Center, 1973.

10. Louisiana Advisory Commission on Coastal and Marine Resources, Louisiana Wetland Prospectus, 1973.

11. Act 279 of 1971 creating the Coastal Resources Management Council, Sections 46-23-1 through 46-23-12 and 42-17-1 through 42-17-4 of the General Laws of Rhode Island.

12. Alyn C. Duxbury, "Coastal Zone Processes and Their Influence on Estuarine Conditions," Nearshore and Estuarine Zone Symposium, University of Washington.

13. Wallace, McHarg, Roberts, and Todd, Inc., Maryland Chesapeake Bay Study, 1972.

14. Florida Coastal Coordinating Council, Coastal Zone Management in Florida--1971, 1971

15. Chapter 222 of the Acts of 1969 of the Massachusetts State Legislature.

16. Earl H. Bradley, Jr. and John M. Armstrong, A Description and Analysis of Coastal Zone and Shoreland Management Programs in the United States, University of Michigan Sea Grant Technical Report #20, 1972

17. Peter M. Douglas, "Coastal Zone Management--A New Approach," Coastal Zone Management Journal, 1(1), 1973.

ADDITIONAL REFERENCES

1. American Society of Photogrammetry, Proceedings of Coastal Mapping Symposium, Potomac Division, 1972.

2. Ecbo, Dean, Austin, and Williams, State of Hawaii Land Use Districts and Regulation Review, 1969.

3. Engineering Agency for Resource Inventories, Inventory of Basic Environmental Data for North Carolina, U.S. Army Corps of Engineers, 1973.

4. _____, Inventory of Basic Environmental Data for Southern Louisiana, U.S. Army Corps of Engineers, 1973.

5. W.L. Fisher et al., Environmental Geologic Atlas of the Texas Coastal Zone--Galveston-Houston Area, Bureau of Economic Geology, University of Texas, 1972.

6. J. Michael Robbins, "Coastal Zone Delimitation: A Critical Analysis," Coastal Zone Management Journal, 1(3), 1974.

B. Permissible Uses

1. Introduction

"Permissible land and water uses which have a direct and significant impact on coastal waters", Section 920.12 of the Act's Section 305 regulations, is closely tied to "geographic areas of particular concern", (920.13) and to "designation of priority uses within specific geographic areas throughout the coastal zone", (920.15). According to the regulations,

> The inventory and analysis of the States' total coastal zone in Section 920.12 should provide the basic data analysis, and criteria necessary to identify specific geographic areas of particular concern. (920.13)

Furthermore,

> [Designation of priority of uses] is closely tied to the requirements in section 920.12 and 920.13 and should build upon the States' findings and conclusions reached concerning "permissible uses" and areas of "particular concern". (920.15)

The states should consider these three elements as interrelated components of sequential process. In determining the permissible uses, states should look ahead to geographic areas of particular concern and priority of uses to ensure that the findings under 920.12 are directly relevant to information required for developing elements 920.13 and 920.15. It may be that determining permissible uses will be less important in itself than it will be as a basis on which states can identify geographic areas of particular concern and determine priorities of uses.

A state must carry out four separate tasks to determine "permissible uses which have a direct and significant impact on coastal waters". These are:

- Determination of land and water uses which will be assessed for impact on identified coastal environments;
- 920.12 (a) Determining criteria and measures to assess the impact of existing projects or proposed uses or classes of uses on the identified coastal environments;
- 920.12(b) Categorizing the nature, location, scope, and conflicts or current and anticipated coastal land and water uses or classes of use; and
- 920.12(c) A continuing compilation, verification, and assessment of the general characteristics, values and interrelationships within coastal land and water environments.

We will discuss subsections 920.12(a), (b), and (c) in their order in the regulations. However, some states may not find the (a), (b), (c) sequence to be the most effective means of developing the information required to prepare elements 920.12, 920.13, and 920.15, for the four tasks are obviously interrelated. States may undertake them concurrently. Whether a state chooses the sequential or the concurrent ordering depends primarily on the nature and development of that state's coastal zone management program. Several states are well advanced in their coastal planning programs and may have accomplished many of the tasks of 920.12, as well as portions of the other elements.

How states choose to accomplish these four tasks will depend on how they interpret what are permissible uses. We discuss determining permissible uses at the end of this section.

Determination of land and water uses which will be assessed for impact on identified coastal environments: The guidelines suggest that states should consider "requirements for industry, commerce, residential development, recreation, extraction of mineral resources, and fossil fuels, transportation and navigation, waste disposal, and harvesting of fish, shellfish and other living marine re-

sources". In addition to these eight general types of uses, states may wish to identify others. For example, four other coastal uses might be national defense, coastal and marine research and education, agriculture and forestry, and water supply and desalination. Concerning education and research uses, states should note that the Act's estuarine sanctuaries provision (Section 312) is intended to assist states in

> ...creating natural field laboratories in which to gather data and make studies of the natural and human processes occurring within the estuaries of the coastal zone.[1]

Factors to consider: Preparing lists of land and water uses for impact assessments will involve several considerations; among these:

- excluding those uses that do not have a direct and significant impact (see section II-A, Boundaries) on coastal waters. Each state must determine for itself the meaning of "direct and significant", because the Act limits determination of permissible uses to those uses which have a direct and significant impact on coastal waters. States must consider this determination as the define of the inland boundaries of their coastal zones.

  States might consider all the uses that have coastal impact-associated problems--that either create coastal impacts which adversely affect other uses or that are adversely affected by other uses. Identifying and analyzing coastal uses with impact-associated problems was a basis for coastal zone management programs designed for Long Island[2], Chesapeake Bay[3], and Delaware Bay[4].
- considering future uses as well as the full range of existing uses. If a state fails to consider an existing or future coastal use as it develops its management program, it may evolve an unrealistic set of policies and plans for those uses it is considering. States should be aware of new technologies that may be applied to the coastal zone--for example, aquaculture; floating platforms for airports; or offshore terminals. States might review forecasts of future coastal technologies [5,6,7] and analytic forecasting technology[8,9]. States might conduct brief analyses to determine those uses that will most frequently occur in the next decade or before 2000 (e.g., public recreation, housing) as well as those less frequent uses that presumably will produce substantial impacts (e.g., power plants)[3].

  If a state does not assess existing or potential future uses for impacts while it is developing its management program, it may fail to develop policies and criteria that will allow substantive reviews and adequate evaluations of these and other potential future uses. The list of uses will change as new technologies and public preferences evolve.
- considering "siting of facilities necessary to meet requirements which are other than local in nature". State policy or public sentiment in the state (or region) may not favor the siting of major facilities thay may be of national interest--refineries, offshore oil platforms and terminals, nuclear power plants, coastal airports, or hazardous waste disposal areas. But states should consider all coastal uses that are of national interest so that future decisions--pro or con--regarding siting of those uses can be based on well-documented information regarding relative costs and benefits.
- defining "use" specifically. The eight types and uses the regulations suggest may be too general to allow states to assess impacts. It is the actions normally associated with a use that create the impact, not the use per se. For example, it is the actions of dredging, ship traffic, and spoils disposal that create changes in environmental conditions, not the use, "marine transportation". This diagram illustrates the sequential relationship:

Use	Actions	Changes in environmental or socio-economic conditions (impact)
For example:		
	(Dredging)	(Decrease shellfish production) (Alter estuary circulation)
(Boat harbors)		
	(Spoil disposal)	(Release of toxic sediments) (Filling of wetlands)

The more specifically a state defines a use (e.g., marinas, water contact sports, camping, instead of coastal recreation generally), the more precisely it will be able to define a use's associated actions, and the more specifically it will be able to identify potential impacts. However, identifying uses specifically will increase the number of uses a state must consider. States will have to decide between the added advantages of information on impacts and the added analysis costs required from considering a longer list of uses. Planners have developed several impact identification methods (matrices, networks, checklists) that relate actions associated with a use to potential impacts those actions may generate. States might review surveys of different impact identification techniques to determine which method or methods are most appropriate to their needs[10,11,12].

2. Determining Criteria and Measures to Assess Impacts

"Criteria" here means a measurable condition of a component of the environment, the society, the economy--e.g., nitrous oxides, employment, per capita income. With this meaning of criteria, "measure" means an indicator for scaling a criterion. "Identified coastal environments" means the socioeconomic environment as well as natural and physical environments.*

Three different methods of determining criteria and measures of impacts are available:

- analyzing case studies and using professional judgment on affected coastal environments and how these changes have affected other uses, or vice-versa, or how one particular use has affected others through changes in environmental and socioeconomic conditions[2,3,13];
- analyzing environmental and socioeconomic conditions and systems to determine how they might be changed by various actions associated with coastal uses (see discussion of Section 920.12 (c))[14,15]; and
- surveying public values and preferences for coastal activities and their associated impacts to select assessment criteria and measures which reflect such values and to allow public review of preliminary or proposed criteria and measures. For example, dissolved oxygen or other chemical measures are scientifically sound criteria to use in assessing environmental impacts, but the public's perception depends generally on visual criteria--e.g., jetsam, turbidity, discoloration--and although the two criteria are not generally mutually exclusive, at times they are [16,17].

These three methods can reveal several different types of impact. Each category of impact has one or more criteria by which a state can measure change.

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* Based on Section 920.12 that specifies "economic indices of impact must be developed" and on Section 920.13 which requires consideration of those areas suited for intensive use or development.

The following list of impact types and criteria is based in part on environmental and socioeconomic considerations mentioned in the regulations and in the Act (e.g., full consideration of ecological, cultural, historic, and aesthetic values). The list is meant to illustrate the scope and nature of criteria that states could consider; it is not necessarily definitive.

Impact of environment on use

Type of impact	Criteria	Measure
floods	.magnitude	.height above mean sea level
	.damage	.dollars
	.frequency	.events per X number of years
seismic events	.magnitude	.extent of movement
	.damage	.dollars
	.frequency	.events per X number of years
landslides	.magnitude	.tons and area of movement
	.damage	.dollars
	.frequency	.events per X number of years
coastal erosion	.magnitude	.tons and area loss
	.damage	.dollars
	.frequency	.rate per year

Impact of uses on environmental and socioeconomic conditions

Type of impact	Criteria	Measures
hydrologic	.ground water quality and quantity	.ppm of salts, volume
	.surface water quality and quantity	.ppm of dissolved oxygen, flow rate
atmospheric	.air quality	.ppm of bases or particulates
	.climate modification	.temperature, precipitation
geologic and soils	.erosion	.erosion rate, volume
	.soil quality	.fertility index
biotic	.vegetation type	.decrease or increase in acres
	.species	.population size, species diversity
aesthetics	.visual quality	.ranking of scenic prominence
	.acoustic quality	.decibels of noise
	.smell	.standard comparison index
access and circulation	.highway access	.traffic levels, trip generation
	.public access	.access ways per mile of shoreline
use of public services	.water supply	.water consumption
	.sewage service	.gallons per day
	.recreation	.user days
historic	.historic sites	.visitor days
	.architectural monuments	.visitor days

Impact of uses on environmental and socioeconomic conditions

Type of impact	Criteria	Measures
economic	.regional income	.dollars
	.employment	.percent employment
	.tax base	.appraised value
	.net tax revenue or deficit	.dollars
social	.socioeconomic mix, social structure	.percent of socioeconomic groups
	.per capita income	.dollars
	.employment opportunities	job diversity
energy	.energy consumption	.fuel burned

As states begin to develop their own criteria and measures for assessing impacts, they might study some of the publications which discuss environmental and social indicators in relation to impact assessment[18,19,20,21].

Applying criteria and measures to evaluate impact: A basic problem in assessing impacts is that the measures for the criteria are not in common units (e.g., the difference between ppm of sediment and visitor days). Because measures do not have a common denominator, it is not possible to add them directly into an aggregate figure that will represent a total impact. Even if the measure were in common units, adding them into a total impact figure is difficult because the measured criteria are not perceived as being of equal importance. (Is scenic quality of the same importance as employment? Is wildlife less important than air quality?)[11,22,23,24].

One school of thought says that measures of criteria can be combined into one aggregate figure of impact[25,26]. The regulations' suggestion that four indices be developed for determining impact (beneficial, benign, tolerable, adverse) would be relatively easy to achieve if an aggregate figure of total impact could be derived. Levels of beneficial, benign, tolerable, and adverse impact could be set on a numerical scale according to the degree of beneficial or adverse impact. For example, an impact would be termed beneficial if the aggregate figure exceeded +100 environmental quality units and it would be determined adverse if the aggregate figure exceeded -100 environmental units.

A second school of thought maintains that criteria should be kept separate and measures not combined (multiple accounts or factor profile approach). Adverse, tolerable, benign, beneficial levels of impact would be set for each of the criteria. Each criterion could be evaluated in terms of adverse, tolerable, benign, or beneficial change. A set of multiple accounts would be considered in the evaluation process[24,27,28].

The intent of the four indices--beneficial, benign, tolerable, adverse--appears to be a simple means of summarizing how changes in the environmental and socioeconomic conditions induced by one coastal use will affect other coastal uses. For example, a small boat harbor, through its associated actions of dredging and boat traffic, may degrade the estuary as a wildlife habitat with consequent losses of waterfowl and marine mammal populations. Losing the wildlife habitat and certain resident species is

- an adverse impact on the value of the estuary for education, scientific, research, and wildlife watching areas;

- a tolerable impact for industrial uses;
- a benign impact for a residential development with a view of the harbor; and
- a beneficial impact for boat repairers, boat and equipment salesrooms.

The most evident and direct means of evaluating the adverse or beneficial nature of a measured change in criteria (e.g., a ppm sediment increase) is by comparing the potential impact with relevant state and/or federal standards where these exist. The adverse/beneficial nature of impact would be based on the degree of compliance or conflict with state and federal standards, e.g., air quality, water quality, traffic flow, noise, marine mammals protection. However, no measurable standards exist for many of the potential impacts associated with coastal uses, among these, aesthetic degradation or a community's socioeconomic mix.

If states are to use existing standards to evaluate impacts, they should be aware of at least three potential problems:

- the reasonableness of the state or federal standard. Does scientific evidence support the standard? Does the standard take into account geographic variations in the environment?[29,30].
- the costs and benefits of achieving these standards[29,30]. Do the benefits derived by maintaining environmental impact criteria within limits of the standard more than offset the costs of meeting these standards? For example, a power plant may have to spend eight million dollars in water cooling and diffusion equipment to meet a state or federal standard that requires a discharge water temperature not to exceed 4° above ambient water temperature. But if the discharge water standard were set at 10° above ambient water temperature, the cost of required cooling and diffusion equipment might be reduced to two million dollars. Do the environmental and social benefits gained from a six-degree decrease in effluent temperature equal or outweigh the six million dollar cost of additional cooling and diffusion equipment? The impact assessment process may indicate that state or federal standards should be modified.
- the problem of somewhat arbitrary standards (standard governmental disclaimer: "There is no magic in the level set."). If an impact just exceeds the level set by the standard, it does not mean that the adverse effects will be any greater than those produced by an impact that was just below the level set by the standard. Here again, in trying to deal with this problem, states may find that existing standards might best be modified.

Whatever combination of standards a state chooses for evaluating impacts, it should select a method which includes public participation in the evaluation process, drawing especially on those groups or individuals that will be directly affected by a potential coastal use (see Chapter V for a discussion of public involvement in such related topics as identifying problems, values, and needs, reviewing proposed policies of the management program, and in evaluating program alternatives).

Cumulative impact: States should be aware that they can consider impacts from at least two perspectives: individual and cumulative. Individual impacts are changes actions of one event produce. Cumulative impacts are changes two or more events (simultaneous or sequential) produce.

Impact assessment, as it is currently practiced, is largely an incremental exercise in the sense that the assessment is usually focused on analyzing the added increment of impact that a proposed project may generate--e.g., a housing development that would add 600 more vehicle trips to a coastal highway's traffic

load. The cumulative impact on the coastal highway system's traffic capacity by permitting past and future housing projects with similar generation is usually not considered, or if it is considered, it is analyzed inadequately.

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Because impact assessment is conducted as an incremental exercise, the assessment will usually fail to comprehend the threshold where many apparently insignificant environmental condition changes will reach a cumulative level that will result in the irreversible degradation of a coastal system. More simply, we do not know our capabilities until we have exceeded them. For example, a housing development of 25 units on ten acres may not cause a significant change in the sediment load entering an estuary. However, if all property owners were permitted to construct similar density housing on all lands in the watershed areas with similar site characteristics (as might be the property owner's right under the Constitution's equal protection principles), they might build 10,000 units. The sediment load resulting from the construction of 10,000 units could far exceed the thresholds of estuary water quality and circulation necessary to maintain oyster production, productive waterfowl habitats, navigation channels, and fish nursery areas.

To assess cumulative impact accurately, one must consider not only the adverse effects, but also the various measures available to mitigate these effects. To mitigate erosion and sediment impacts, for example, one could build settling ponds or check dams, or recontour the area. The obvious problem lies in determining how much housing (with mitigating measures) can be allowed before the sediment load exceeds the desired thresholds of estuary water quality and circulation.

One particular type of cumulative impact state and local governments may want to consider is the potential residential and commercial buildout under existing zoning practices. If all privately-held lands on Cape Cod (Barnstable County) were developed to highest density permissible under the existing zoning practices, for example, what would be the total population on peak summer weekends? How would this population stress the present highway system? Would water supply and sewage services be adequate to handle such a population?

One effective aid in assessing cumulative impact is an area-wide data bank. The bank would include maps and other spatially-defined data that exist about a coastal region. Ideally, maps and spatially-defined data would be computerized on a grid or point reference system to enable storage and retrieval according to geographic coordinates[31,32,33].

Data banks and computer mapping also have direct application for inventorying coastal resources and determining geographic areas of particular concern (see below, this section, Means of acquiring information, Section C, Geographic Areas of Particular Concern, and Chapter IV, Organization and Use of Information.

To predict cumulative impacts, states must understand the dynamics of both natural and social systems. Understanding the components and interrelationships of coastal systems appears to be the underlying objective of Section 920.12(c), "a continuing compilation, verification, and assessment of the general characteristics, values and interrelationships within coastal land and water environments".

3. Categorizing Uses

How do the various coastal uses interact with each other? How and to what extent will a substantial change in one coastal use affect other coastal uses? States could base answers to these questions on information developed in several inventory and analysis programs; among these:

- inventory of existing land and water uses;
- analysis of general plans;
- analysis of single-purpose plans;
- suitability analyses;
- coastal dependency plus inland alternatives; and
- input/output analysis.

Inventory of existing land and water uses: Knowledge of existing coastal land and water uses is a logical first step in understanding the interaction among uses. Despite the importance of land use inventories in comprehensive planning programs (long supported by HUD 701 grants), few accurate and detailed land use maps have been prepared on a statewide basis.

The Washington Department of Natural Resources has compiled an atlas of maps on water and shoreland uses along the state's coast[34]. Land use mapping is one component of the University of Texas' (Bureau of Economic Geology) extensive coastal atlas program[35]. The California Ocean Area Plan (COAP) mapped land use for the entire coastline (one-half mile inland and three miles to sea)[36]. In several states, numerous counties and substate regions have prepared detailed land use maps of varying quality[37]. State agencies also prepare maps of land use relevant to their particular responsibilities, e.g., agriculture, recreation use, wildlife preserves[37]. If states build on the existing local and state agency maps, original land use mapping may only be necessary to fill the gaps in state-wide coverage. New inventory and mapping techniques using EROS, other satellite programs, and other remote sensing techniques may greatly facilitate preparing accurate land use maps. (Earth satellite and remote sensing have several other applications to coastal zone management: up-dating land use maps to show development trends, assessing cumulative impact; and determining the dynamics of coastal systems are some of these[38,39,40].)

Analysis of comprehensive plans: Many cities, counties, and substate regions, coastal and non-coastal, have prepared one or more comprehensive general plans in conjunction with HUD's 701 planning assistance program. States may use those plans to assess the types, densities, and locations of coastal uses that local governments are considering or will consider. The general plans may discuss the nature of existing conflicts among coastal uses as well as potential means by which to resolve these conflicts.

A number of regional and local governments have also prepared comprehensive plans for their coastal zones. The Tampa Bay plan[41]; the coastal plan for the San Francisco Bay region[42]; and the Chicago Lakefront plan[43] are three. And the Florida Coastal Coordinating Council has compiled an inventory of local, regional and state comprehensive plans or the elements of comprehensive plans that agencies within the state at various levels have prepared for the state's coastal zone between 1960 and 1972[44].

The quality of comprehensive plans varies greatly, ranging from vague, irrelevant, and inadequate efforts to strong programs that states have implemented[45]. Obviously, the stronger the local general plan, the more consideration the state should give it, especially if there are apparent conflicts between the local general plan and the coastal zone management program the state envisions.

States might consider requiring inclusion of a coastal element when a local government's comprehensive planning group prepares or revises a general plan.

A requirement like this would provide some representation of local and regional interests in the coast.

Analysis of single-purpose plans: State agencies, public utilities, and private industry periodically prepare plans to guide their future action. Common examples are plans for highways, water supplies, sewage services, recreation, ports, and power plants. California, for example, has had at least five coast-related single purpose plans: California Small Craft Harbors and Facilities Plan[46], Ocean Coastline Study (Parks and Recreation)[47], California Fish and Wildlife Plan[48], California Protected Waterways Plan[49], and Marine Resources for California Higher Education[50].

States should examine single-purpose plans to determine the degree to which the information, assumptions, and analytic techniques in these may be biased toward the interest of the proponent agency. The keystone of a single-purpose plan is the analysis of present and future demands. Demand analysis is usually the part of the plan that is most often criticized for bias and insubstantial findings. Demand is difficult to assess because of the complicated factors one must consider; among these,

- analysis of population dynamics--areas of population increase and decrease based on migration flows;
- changing public attitudes, preferences, priorities--e.g., lowering environmental quality standards to ease the energy crisis;
- technology forecasting--new processes that will alter existing demands or add new coastal resource demands, minimize or prevent existing or expected conflict between coastal resource demands;
- changes or elimination of existing federal and state programs, addition of new federal and state programs;
- supply of the resource the use requires, the economics of supply and demand; and
- change in the nature, pattern, or intensity of other coastal uses.

States may wish to encourage agencies, utilities, and industrial organizations (e.g., a consortium of oil companies) to prepare single-purpose plans for coastal uses. Even without revealing proprietary information, single-purpose plans can provide the coastal management agency with several types of pertinent information--examples could be how and to what degree a use is affected by other uses; a coastal use's potential change over time; and why the use is important to the state. Comparing single-purpose plans should, at least in some cases, allow the state to determine specifically the location and degree of conflict or compatibility among coastal uses.

Suitability analysis: Suitability or resources analysis is one form of location theory planners commonly use to evaluate potential sites for commercial and industrial developments. Suitability analysis is based on the geographic location of environmental or socioeconomic attributes that attract or constrain particular coastal uses. Examples of attributes are:

- direct access to deep draft channels or potential deep draft channels for port facilities;
- adjacency to port facilities for tank farms, refineries, bulk processing;
- non-living extractable resources--oil, gas, sand and gravel, mineral deposits;
- coastal climate influence on crop production for coastal specialty crops;
- coastal lands with exceptional scenic qualities for recreation and residential development;
- coastal waters with high waste water assimilation capacity for thermal and sewage outfalls;

- coastal airsheds of high pollution assimilation capacity for highways and heavy industry; and
- buildable sites--favorable slope, soil, absence of geologic hazards--for residential, industrial, and commercial structures.

Usually planners will do a suitability analysis as one component of either a general or single-purpose planning program. Ian McHarg's Design with Nature is perhaps the best known example of the suitability analysis approach, but there are several others[51,52,53]. States may wish to conduct suitability analyses to determine where two or more uses will conflict because of areas' environmental or socioeconomic attributes. This conflict can occur in two ways: first, potential uses may seek the same location. For example, tourist/commercial and residential development, and public recreation all compete for coastal lands of exceptional scenic quality. Second, a coastal location may have two or more attributes. When this is so, uses competing for any of the attributes are all competing for the same location. Coastal lands of exceptional scenic qualities (and therefore attractive to residential development and recreational uses) may also be adjacent to deep water and a highway, and thus suitable for port-related industries.

One particular advantage of suitability analysis is that it will provide a geographical overview of the intensity of potential conflict. Analyses should identify areas where competition is intense ("hot spots") versus areas of low or no conflict. Given limitations of time and funding, states may consider concentrating the research and information collection on the hot spot areas, rather than expending effort evenly throughout the coastal zone. Maps and conclusions developed by suitability analysis are particularly relevant to determining geographic areas of particular concern.

Coastal dependency and inland alternatives: Within recent years the concept of a use's dependency on coastal resources has emerged as a possible criterion for choosing among competing coastal uses. The concept appears to have been initiated in the criterion of the San Francisco Bay Plan that stated users seeking to locate on or immediately adjacent to the Bay should demonstrate that they require a waterfront location for their activities[54]. COAP extended the Bay Plan's waterfront requirement concept to its own criterion that uses permitted within the coastal zone must be substantially dependent on the resources of the coast for their existence[36]. Michigan recently considered using dependency as a means of setting priorities among proposed uses[55]. The underlying rationale of dependency is that non-coastal dependent uses' denial or removal of coastal dependent uses will raise the price and lower the quality of coastal goods and services available to the public.

One direct means to measure dependency is the calculation of opportunity costs. Usually the opportunity costs will be a combination of the extra investment needed to create inland the particular coastal zone attributes used in an operation and the extra operating costs associated with an inland operation, such as transportation and equipment operation. Essentially, the higher the opportunity cost of moving inland, the higher the coastal dependency. COAP set four levels of dependency based on the percentage difference between the costs of inland and coastal location. The California Advisory Commission on Marine and Coastal Resources outlined a number of problems associated with criteria of dependency COAP presented[56].

If a state uses the dependency concept to force non-dependent uses inland, it should consider both the inland and coastal impacts. What would be the variety and mix of coastal land uses if only coastal dependent uses were allowed? The coastal zone might be a continuous strip of marinas, ports, and bathing

beaches if the state were to apply dependency criteria rigidly. If uses are displaced from the coast, where will they locate and what may be the environmental and socioeconomic costs associated with the inland location? A state should determine whether environmental and/or socioeconomic impacts of the coastal use displaced to an inland location will be greater or less than the net impacts that would occur if the use were allowed to locate on the coast.

Input/output analysis: One of the more sophisticated methods of determining interaction (specifically, economic interdependence) among coastal uses is input-output analysis (sometimes called "interindustry analysis"). Basically the input/output analysis shows the inputs (materials, labor) to each industry from other industries and sectors; and how the output (product) of each industry is distributed among other industries and sectors of the economy. (William Miernyk's The Element of Input-Output Analysis, provides a non-mathematical explanation of input/output analysis[57].)

The matrix relationship among coastal uses is called a transactions table. Planners can use the model of economic interdependence developed by input/output analysis effectively to estimate how a change in one of the uses listed in the transactions table will affect (in terms of inputs and outputs) other uses listed in the transactions table. There are several examples of the application of input/output analysis for determination of the economic interdependence (and to some degree environmental interdependence) of uses within a coastal region[58,59,60,61,62].

There are two notable problems with input/output analysis. Construction of the transaction table requires the collection of considerable amounts of recent economic data. Operating the system, once it is set up, requires the continuous up-dating of the economic data. States could consider simpler and less costly techniques, among which are trend analysis and econometric models, to analyze the economic interactions among coastal uses.

If a state overlays and compares the information derived from two or more of the six inventory and analysis programs mentioned above, it will see the nature, location, scope, and conflicts of current and anticipated coastal uses. For instance, if planners overlay a map of land uses as portrayed by single-purpose plans with a map based on suitability analysis, they can compare locations of proposed use to locations where uses are inherently suitable. They can identify areas where uses propose to locate on sites that are not inherently suitable for the particular use. In cases of such mismatch, they could use analysis of coastal dependency and maps of alternative inland locations to determine the likelihood of locating a use inland and the comparative costs (impacts) between inland and coastal locations.

4. Continuing Compilation, Verification, and Assessment of Information

Knowledge of the general characteristics, values, and interrelationships within coastal land and water environments is an obvious prerequisite for predicting the potential impacts that the actions of a given coastal use may generate. Determining the criteria and measures for impact (920.12(a)) depends on understanding the interactions among actions associated with coastal uses and environmental conditions and systems. (Environment is defined in its broadest meaning to include natural, cultural and socioeconomic conditions.)

Coastal systems: Obviously, several problems coastal management must confront derive from past failure to consider the coastal zone as a set of environmental, public, and social systems[63]. Coastal systems and associated problems that states could consider include:

. Estuary watershed
ground water or stream pollution, estuary water quality, and effects on biota;
ground or stream water flows, estuary and wetlands salinity, and effects on biota;
stream sediment loads, estuary sedimentation, and effects on biota; and
stream sediment loads and deposition of beach materials on estuary or open coast shore.

. Estuary circulation system
direct discharge of wastewater into estuary from all sources, estuary water quality, and effects on biota.

. Ocean basins
direct discharge of wastewater, oil, solid waste from all sources, quality of ocean waters and sediments, and effects on biota; and
estuary pollution, quality of ocean waters and sediments, and effects on biota.

. Littoral circulation cells
control of coastal erosion and erosion-accretion dynamics within littoral circulation cells.

. Air basins
atmospheric emissions from all sources, ambient air quality, effects on biota, and human health.

. Populations of sport and commercial species
degradation of coastal streams and size of anadromous fish populations;
degradation of estuarine habitats and size of waterfowl, wildlife, and fish populations;
harvesting of commercial or sport species and maintenance of a sustained yield population; and
food web.

.Public services
land use within sewage services district and capacity of sewage system;
land use within water services district and capacity of water supply system; and
land use within highway service area and highway congestion.

This is only a partial listing. Thorough analysis of environmental systems has been prepared in John Clark's Coastal Ecosystems: Ecological Considerations for Management of the Coastal Zone[64] and by Howard Odum and others in Coastal Ecological Systems of the United States[65].

If states follow Section 920.12 carefully, they will collect information and develop models to understand the dynamics of coastal systems like those listed above and predict how systems will respond to the actions of coastal uses as a first step in planning for management.

Values of the coastal land and water environments: Subsection 920.12(c) specifies states should assess the values of the coastal land and water environments. The Congressional findings of the Coastal Zone Management Act (Section 302) include the declarations that

(b) The coastal zone is rich in a variety of natural, commercial, recreational, industrial, and esthetic resources of immediate and potential value to the present and future well being of the Nation;

(e) Important ecological, cultural, historic, and esthetic values in the coastal zone which are essential to the well being of all citizens are being irretrievably damaged or lost;

(f) Special natural and scenic characteristics are being damaged by ill-planned development that threatens these values.

Political and legal support for determining permissible uses and designating priority uses depends on demonstrating the social values that the coastal zone management program is protecting or enhancing. The procedure by which states determine the values of coastal land and water environments should answer the question, "What is coastal zone management achieving?" (See also the discussion of standards, Section II-A, Boundaries.)

States will have to weigh the economic and social costs of regulating coastal land and water uses against the overall values they will derive from implementing the proposed coastal zone management programs. For example, states should base their determinations that oil refineries are a nonpermissible use of wetlands environment--at least in part--on the finding that protecting wetlands is necessary to maintain or to increase specific economic and social values; among these, commercial fishing, sport fishing, waterfowl hunting, research and education activities, and coastal tourism.

Identifying the values of coastal land and water environments usually does not present a problem. In most cases identification is simply a matter of relating the particular land or water environment to the uses which benefit from its resources. Coastal lands with a view of the ocean are valuable for tourism, recreational activities, and second home or other residential development. Similarly, estuaries with rare species or rich in species diversity are valuable for educational and research uses.

The two significant problems in determining value are measuring and estimating how values will change with changes in land or water environments. For this, monetary value is the most common and best understood measure.

The estimated annual monetary value of estuaries for the current level of shellfish and sport fishing on the Georgia coast was 33.7 million dollars (or, estuaries/acre/year value was $108.00)[82,83]. If the $108/acre figure is interpreted to be the annual "rent", the property value of the Georgia wetlands would be approximately $1,250/acre (assuming rent represents an 8% return on investment). Two other examples of measuring the monetary value of environments are provided by studies on estuary water quality[84] and migratory waterfowl[85]. Many qualities of coastal land and water environments do not lend themselves to monetary evaluation. In these cases, states may use non-monetary measures (e.g., intensity of use, number of people who benefit, scarcity/uniqueness, willingness to travel, diversity indices, and direct public expression).

Once the value of the coastal environments are measured, the problem is then to estimate how the situations those measurements represent may change if the coastal environment is altered by future development proposals. If a commercial fishery is worth x million dollars per year, will the construction of a petrochemical complex on one estuary substantially reduce the dollar value of that fishery? And even if it is determined that the dollar value of the fishery will not be substantially reduced, will the non-monetary considerations (e.g., aesthetic impacts or change in community life-style) outweigh the potential benefits of industrial development?

Ideally, states should develop the capability to estimate the relative social values and costs that will accrue from managing coastal environments at different levels of system maintenance. For example, states could determine one level of values and costs for maintaining an estuary in near-pristine condition, as well as other levels of costs and benefits that would be associated with different types and intensities of development and corresponding levels of estuarine degradation. Information on the costs and benefits of maintaining the estuary

at different levels of quality would be the basis for determining the most desirable mix of development and conservation uses.

Means of acquiring information: Inventorying, monitoring, and developing models are three general means by which a state may acquire information on the general characteristics, values, and interrelationships within and among the coastal land and water environments. Each of these three methods develops information relevant to the determination of geographic areas of particular concern. (See Section II-C, Geographic Areas of Particular Concern).

. Inventorying and mapping: Several states, interstate regions, and substate regions, and substate regions have already begun inventory programs to collect information on environmental and socioeconomic conditions applicable to impact assessment. The Smithsonian Institution has recently surveyed state-wide and region-wide environmental inventorying programs. They issued a first draft report in November 1973: "Areas of Critical Environmental Concern: Inventory and Evaluation in a Statewide Program"[66].

The various coastal inventorying and mapping programs can be divided into three types, depending on the nature of the information they depict:

. single factor maps (area-wide or point): maps depicting one environmental or socioeconomic condition, such as soil types, land use, vegetation communities, wildlife habitats, wetlands. Often the entire collection of maps is assembled into an atlas. The Washington Marine Atlas[33], the Anchorage Atlas[67], Oregon's Wetland Study[68], the Penobscot Bay Study[52], Florida's Coastal Zone Management Atlas[53], the Delaware River Estuarine Marsh Survey[69], and the Environmental Geologic Atlas of the Texas Coastal Zone[35] are some examples. Figure 1 provides a graphic example of the single factor map.

. designation of units: two or more environmental or socioeconomic conditions, such as soils, slope, vegetation, are combined to define units (e.g., highly forested upland areas). Units have usually been defined to describe geographic areas of similar environmental or resource capability or suitability. The land and water resource capability units the Texas coastal atlas program developed are a good example[34]. Figure 2 is an illustration of the Texas resource capability unit designation.

. system delineation: one or more environmental or socioeconomic conditions are used to define a system. System delineation can be very similar to single factor maps or unit definitions. The difference is that system delineation is based on dynamic interaction among environmental and/or socioeconomic components (watersheds and estuary-wetlands complexes are commonly defined as systems). Several studies have inventoried and mapped coastal systems; three of these show, respectively, ecological systems in the U. S. coastal systems in Maine, and wetland systems in Louisiana[65,70,41]. In Coastal Ecosystems: Ecological Considerations for Management of the Coastal Zone, the author shows the use of system delineations in combination with unit designations and single factor maps[64].

One obvious value inventories and maps have is to help determine the total supply and distribution of coastal resources. How many acres of coastal wetlands or of publicly accessible swimming beaches does a state possess? Inventory and mapping programs should help answer questions about the uniqueness or scarcity of coastal resources. The quantification of scarcity and uniqueness is a commonly used criterion for determining geographic areas of particular concern[66]. Scarcity and uniqueness are also values by which states may set priorities among uses for specific geographic areas (See Section II-D, Priority of Uses.

Developing a computer mapping capability (see discussion of Cumulative impact,

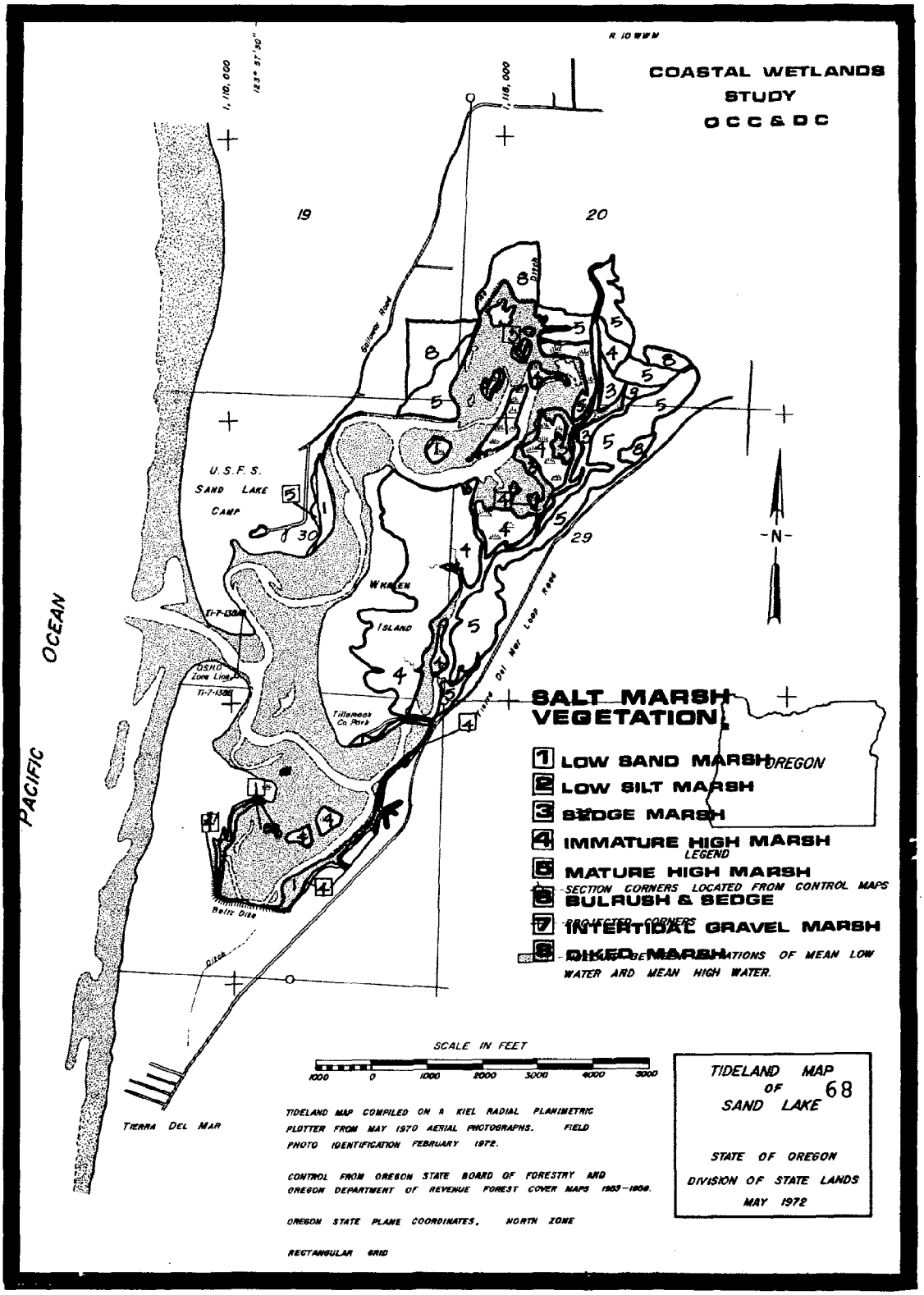
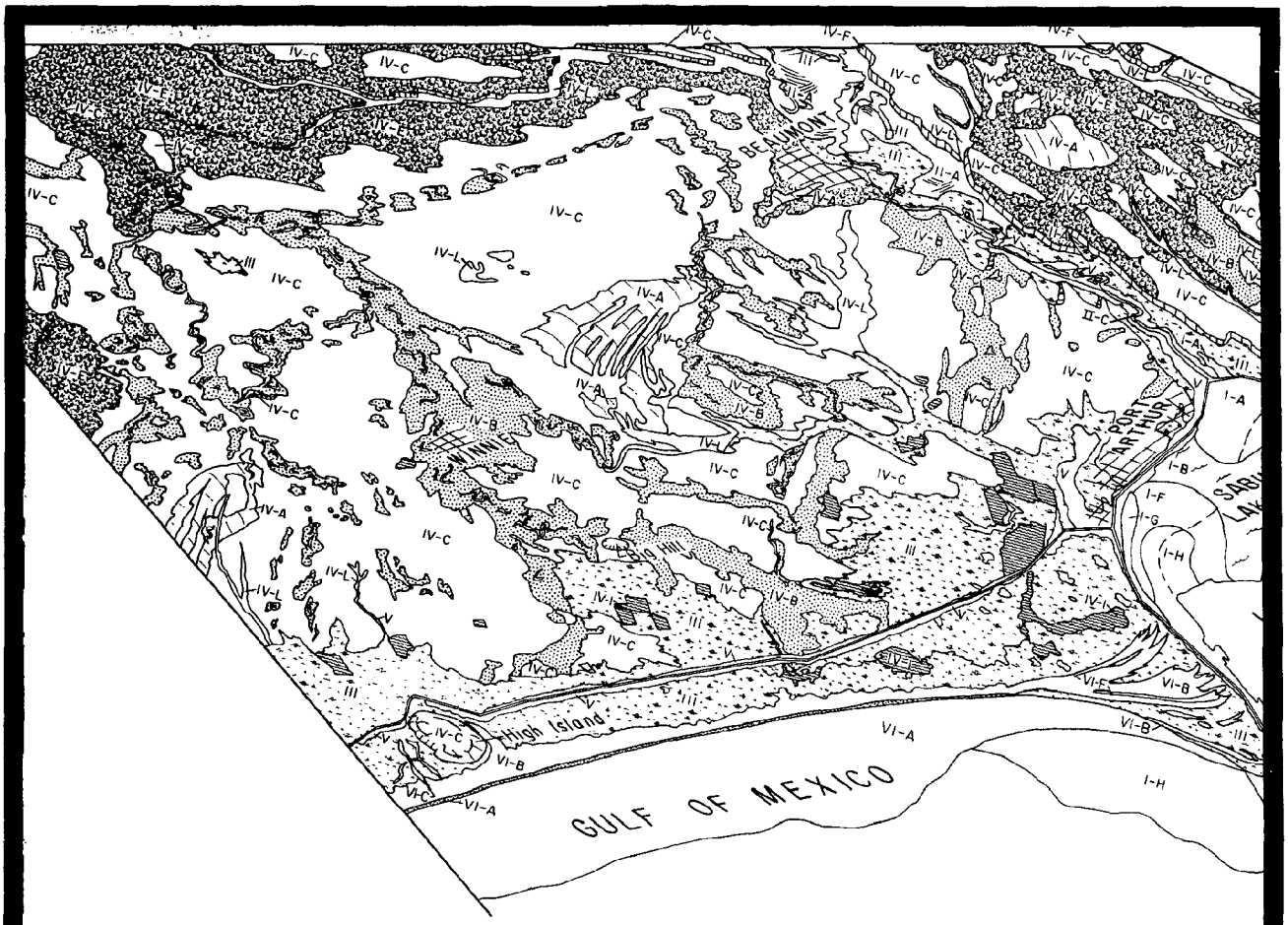

COASTAL WETLANDS
STUDY
OCC&DC
R. 10 WWM
1,110,000
123° 57' 30"
1,118,000
19
20
29
30
U.S.F.S.
SAND LAKE
CAMP
WHALEN
ISLAND
Tillamook Co. Park
Tierra Del Mar Loop Road
Gallaway Road
Ditch
Baltz Dike
PACIFIC
OCEAN
N
SALT MARSH
VEGETATION
1 LOW SAND MARSH
2 LOW SILT MARSH
3 SEDGE MARSH
4 IMMATURE HIGH MARSH
5 MATURE HIGH MARSH
6 BULRUSH & SEDGE
7 INTERTIDAL GRAVEL MARSH
8 DIKED MARSH
OREGON
LEGEND
SECTION CORNERS LOCATED FROM CONTROL MAPS
PROJECTED CORNERS
ATIONS OF MEAN LOW
WATER AND MEAN HIGH WATER.
SCALE IN FEET
1000 0 1000 2000 3000 4000 5000
TIDELAND MAP COMPILED ON A KIEL RADIAL PLANIMETRIC PLOTTER FROM MAY 1970 AERIAL PHOTOGRAPHS. FIELD PHOTO IDENTIFICATION FEBRUARY 1972.
CONTROL FROM OREGON STATE BOARD OF FORESTRY AND OREGON DEPARTMENT OF REVENUE FOREST COVER MAPS 1953-1958.
OREGON STATE PLANE COORDINATES, NORTH ZONE
RECTANGULAR GRID
TIERRA DEL MAR
TIDELAND MAP
OF
SAND LAKE
68
STATE OF OREGON
DIVISION OF STATE LANDS
MAY 1972

FIGURE 1



COASTAL WATER BODY AND LAND CLASSIFICATION

I. Bays, lagoons, and estuaries
- A. River-influenced bay
- B. Enclosed bay
- C. Reef and reef-related areas (absent)
- D. Grassflats (absent)
- E. Mobile bay-margin sands (absent)
- F. Tidally influenced open bay
- G. Subaqueous spoil
- H. Tidal inlet and tidal delta
- I. Wind-tidal flats (absent)

II. Major river systems
- A. Point-bar sands
- B. Overbank muds and silts (not illustrated)
- C. Water (including related lakes and sloughs)

III. Coastal wetlands

Salt marsh, fresh-water marsh, swamps

IV. Coastal plains
- A. Highly permeable sands
- B. Moderately permeable sands
- C. Impermeable muds
- D. Broad, shallow depressions (not illustrated)
- E. Highly forested upland areas
- F. Steep lands
- G. Stabilized (vegetated) dunes and sand flats (absent)
- H. Unstabilized (unvegetated) dunes (absent)
- I. Fresh-water lakes, ponds, sloughs, playas
- J. Mainland beaches (absent)
- K. Areas of active faulting and subsidence (not illustrated)
- L. Headward-eroding streams

V. Made land and spoil

VI. Coastal strandplain
- A. Beach and shoreface
- B. Vegetated strandplain and chenier flat
- C. Washover areas
- D. Active dunes (absent)
- E. Tidal flats (absent)
- F. Swales

Schematic map of land and water resource capability units, Beaumont-Port Arthur area.[35]

FIGURE 2

above) can greatly assist the state in quantifying uniqueness and scarcity as well as depicting geographic distribution of coastal resources[72]. Maps that have been computerized can be overlaid to produce a uniqueness/scarcity measure for a combination of environmental and social factors. For example, a computer map could indicate the location of and acreage of areas that had a combination of the following characteristics: view of the ocean, indigenous vegetation, located within one hour drive of a central city, and in private ownership--if, of course, each of these factors is mapped and entered into the computer. Uniqueness/scarcity and geographic distribution can be determined without a computer by simply overlaying transparent single factor maps. The manual overlay technique may be a more cost-effective means of determining uniqueness/scarcity and distribution than computer mapping would be. The comparative cost-effectiveness of the two techniques will depend on the quantity and quality of single factor maps, the application of the inventory information to other parts of the management program, and particular issues that a state is trying to resolve in its coastal zone management program.

Inventory and mapping programs can also begin to describe the dynamics of environmental and social impact. For example, the Texas Environmental Geologic Atlas Program mapped environmental geology; physical properties; environments and biologic assemblages; current land use; mineral and energy resources; active natural processes, man-made features and water systems; rainfall discharge and surface salinity; and topography and bathymetry[35]. These nine maps, and especially the environmental geology map, served as the bases for the land and water resource capability units. The Atlas describes coastal activities of various coastal uses in terms of compatibility with the environmental characteristics that make up the land and water capability units (Figure 2).

Before embarking on costly inventory and mapping efforts, states should consider some of the drawbacks of this technique. The Smithsonian researchers and others have noted that one of the basic problems of inventorying and mapping programs is that much of the information these programs develop turns out to be marginally relevant to the resolution of issues confronting the management program[56,66]. (We discuss this further, as part of developing issue-oriented information programs, in Chapter IV, Organization and Use of Information.) States that embark on inventorying and mapping programs should be aware of five other reasons these programs may not be useful: researchers collect the wrong type of information; they do not collect certain "key" types of information; they use too gross a scale; they base the inventory on marginally accurate or inaccurate data; and they choose too small a geographic area to be useful[32].

. Monitoring: Monitoring programs involve the collection of time series data. Most coastal states have several extensive programs monitoring environmental and socioeconomic phenomena. Common subjects for monitoring programs are water quality, air quality, stream flow, sediment transport, fish and wildlife census, traffic counts, recreation user days. Often the time series data being collected has little or no application to coastal zone management (or any other form of resources management). Often the reason for collecting time series data is that the particular phenomenon happens to be measurable over time, not that there is a demonstrated need for this information. The dual intent of monitoring programs for coastal zone management should be developing descriptive models that simulate the interrelationships within and among coastal land and water environments (coastal systems); and predictive models to estimate the probability, duration, degree, and spatial dimension of a use's impact.

A state may improve substantially its capability to predict impact by moni-

toring environmental and socioeconomic phenomena. Common subjects for monitoring programs are water quality, air quality, stream flow, sediment transport, fish and wildlife census, traffic counts, recreation user days. Often the time series data being collected has little or no application to coastal zone management (or any other form of resources management). Often the reason for collecting time series data is that the particular phenomenon happens to be measurable over time, not that there is a demonstrated need for this information. The dual intent of monitoring programs for coastal zone management should be developing descriptive models that simulate the interrelationships within and among coastal land and water environments (coastal systems); and predictive models to estimate the probability, duration, degree, and spatial dimension of a use's impact.

A state may improve substantially its capability to predict impact by monitoring the environmental and socioeconomic condition before, during, and after construction of coastal projects. The data it derives from monitoring these projects can help the state develop improved predictive models.

Modelling: Researchers have constructed numerous models that use environmental and socioeconomic data to estimate the probability, duration, degree, and spatial dimension of uses' impacts, and to describe coastal systems' dynamics. Others have conducted surveys of models applicable to a number of coastal environmental and socioeconomic conditions or systems--for example, estuary hydrodynamics[73,74]; watershed dynamics [75,76]; noise[77]; public service systems (highway, water, sewage)[78]; and visual impact[79].

States can use models to examine the relationships within and among coastal systems and to assess the impacts of use activities on coastal resources. They can also use models to help determine the important data requirements in coastal resource monitoring programs. Developing models is an iterative process which initially assumes a structure for the coastal processes of interest and which will therefore require the data relevant for parameter estimation and model verification. As the model structure becomes more refined and verified, the data needs will become more specific in terms of key variables states wish to measure.

For this reason, states should design monitoring programs concurrently as they develop models to reduce acquiring large amounts of potentially unimportant data. However, a well-designed monitoring program which precedes states constructing models is useful--even essential--when enough resource system data on which to build a model is not available.

In terms of impact criteria development, models which other researchers have verified scientifically and experts have judged reasonable representations of a process can provide insights to the key variables that are some of the criteria for assessing impacts.

Even though several researchers have developed a variety of models, planners are not using them extensively for impact assessment. Among the reasons for this are lack of data and information necessary to operate the model; time and monetary costs to put data into the model; and the absence of models that can predict accurately the potential impacts that are of specific concern to those trying to assess the impacts. In lieu of models, many planners use or seek professional judgment.

Low cost and short time period are the two major advantages to using or seeking professional judgment. But obviously the scope and the accuracy of predictions from professional judgments is directly dependent on the capabilities of the individuals involved. Experience with analogous situations and familiarity with pertinent information are major determinants of the quality

of the judgments. Because of the subjectivity inherent in predictions based on professional judgment, any such predictions are extremely susceptible to criticism and to repudiation from opposing opinions.

5. Determining Permissible Uses

In determining permissible uses as one of the first steps in developing its planning program, a state has at least two possibilities:

First, it may categorically exclude certain uses from the state's entire coastal zone, basing this exclusion on potential impacts the use would generate or on the existence of suitable inland alternative locations. (A state might define these uses as non-permissible.) A state could determine categorical exclusion several ways; among these,

- a use's potential impacts cannot comply with federal or state-wide performance standards, in particular, with air or water quality standards. New oil refineries unable to meet a state's existing, uniform coastal zone air quality standards could be one example.
- a use's potential impacts cannot comply with federal or state geographically-defined standards or policies in all areas where the type of use seeks to locate. An example would be a state wetlands law that protects all potential sites for small boat harbor development from dredging and filling activities necessary for constructing these harbors, and
- a use could be located inland because it is not dependent on a coastal location, and inland locations exist that would provide higher net social benefits than if the use were located on the coast. The COAP recommendation that residential development be considered a non-dependent coastal use and be required to seek alternative inland locations is an illustration[36].

Second, a state could categorically exclude certain types of coastal uses from types of coastal environments or specific geographic areas that occur within a state's coastal zone. Different types of coastal environments reoccur within the coastal zone--wetlands, dunes, bluffs, flood plains, for example. Specific geographic areas would be areas like San Francisco Bay, Florida Everglades, and Suffolk County, New York.

A state could base exclusion on the potential impacts a use could generate or on its degree of dependency on the type of coastal environment ("environment" in this context is broadly defined to include natural, physical, and socioeconomic situations) or specific geographic areas the use seeks.

For a state categorically to exclude a use under this second possibility would involve determining that

- the expected net adverse impact on an identified type of coastal environment or specific geographic area would exceed desired levels. Examples would be excluding residential and tourist commercial development from wetlands; and prohibiting residential development on fill in San Francisco Bay.
- a use's potential impact cannot fully comply with federal or state standards for a type of coastal environment or a specific geographic area. Wetlands control laws in New Jersey and Massachusetts, and beach laws of Oregon are examples. Exclusion of oil terminal facilities from Penobscot Bay would be another;
- a use is not dependent on an identified type of coastal environment or specific geographic area--or conversely, the inherent suitability of the coastal environment type or geographic area would conflict with specific types of coastal use. Residential development does not depend on wetland locations and wetlands do not have an inherent environmental suitability for residential development. For example, proposed development on or adjoining San Francisco

Bay would have to demonstrate that its planned activities are waterfront-related[54].

A state seeking to determine categorical exclusions in this second category should consider as well "designation of priority uses within specific geographic areas throughout the coastal zone". (See Section II-D, Priority of Uses)

The several means of determining permissible uses are not mutually exclusive. A state will probably select a combination of measures to determine permissible uses. It may categorically exclude a few uses from its coastal zone and declare other uses "non-permissible" for certain types of coastal environments and/or specific geographic areas.

Given the size and diversity of most states' coastal zones, it is unlikely that many uses will be categorically excluded from the entire coastal zone on the basis either of potential adverse impacts or dependency on coastal location. If a state excludes "facilities (uses) necessary to meet requirements which are other than local in nature" from its entire coastal zone--the first kind of categorical exclusion we discuss above, the regulations indicate that the state should demonstrate "adequate consideration of national interest" preceding the exclusion decision (see Section II-D, Priority of Uses, for discussion of the national interest).

CITATIONS

1. U. S. Department of Commerce, National Oceanic and Atmospheric Administration, "Estuarine Sanctuary Grants: Application and Selection Criteria Procedures," Federal Register, 39(46), 7 March 1974.
2. Center for the Environment and Man, Inc., A Proposed Problem-Oriented Marine Research Program for Long Island, prepared for the Regional Marine Resources Council, A Committee of the Nassau-Suffolk Regional Planning Board, February 1972.
3. Robert H. Ellis, Philip Cheney and David Zoellner, A Method for Applying Research to Environmental Planning and Management: A Case Study of Issues Important to the Chesapeake Bay Region, prepared for the National Science Foundation, RANN Program, May 1973.
4. William McGuinness, Priority Management Areas and Problems in the Delaware Estuary, prepared for the Delaware Estuary System Environmental Impacts and Socio-Economic Effects project, sponsored by National Science Foundation, RANN Program, May 1973.
5. Miller B. Spangler, Long-Range Forecasts of Activities in the Marine Environment, National Planning Association, September 1971.
6. Miller B. Spangler, New Technology and Marine Resource Development, A Study in Government/Business Cooperation, Praeger, 1970.
7. Marine Technology Society, Los Angeles Region Section, Coastal Zone Management and the Western States Future, to be published by the Marine Technology Society, Los Angeles Region Section, Summer 1974.
8. Erich Jantsch, Technological Forecasting in Perspective, Organisation for Economic Cooperation and Development, Paris, 1967.
9. Robert Ayres, Technological Forecasting and Long-Range Planning, McGraw-Hill, 1969.

10. B. Schlesinger and D. Daetz, "A Conceptual Framework for Applying Environmental Assessment Matrix Techniques", Journal of Environmental Sciences, XVI(4), July/August 1973.

11. Jens Sorensen and Mitchell Moss, Procedures and Programs to Assist in the Environmental Impact Statement Process, National Technical Information Service, Publication COM-73-11033, April 1973.

12. Leonard Ortolano, Editor, Analyzing the Environmental Impacts of Water Projects, U.S. Army Engineer Institute for Water Resources, Report 73-3, March 1973.

13. Florida Coastal Coordinating Council, Recommendations for Development Activities in Florida's Coastal Zone, April 1973.

14. University of Texas Division of Natural Resources and the Environment, Bay and Estuarine System Management in the Texas Coastal Zone, prepared for the Office of the Governor, Division of Planning Coordination and Others, March 1973.

15. South Carolina Wildlife and Marine Resources Department, Guidelines for Evaluating Coastal Wetland Developments, Charleston, January 1974.

16. David Fischer, Southern Rhode Island Coastal Zone Attitudes, University of Rhode Island Sea Grant, Occasional Paper, 71-002, 1971.

17. Robert Ditton and Thomas Goodale, Marine Recreational Uses of Green Bay: A Study of Human Behavior and Attitude Patterns, University of Wisconsin, Sea Grant Program, Technical Report 17, December 1972.

18. U.S. Environmental Protection Agency, Office of Research and Monitoring, Environmental Studies Division, Quality of Life Concept: A Potential New Tool for Decision-Makers, Government Printing Office, March 1973.

19. William Thomas, Editor, Indicators of Environmental Quality, Plenum Publishers, 1972.

20. Smithsonian Institution Ecology Program, Development of a Continuing Program to Provide Indicators and Indices of Wildlife and the Natural Environment, Prepared for U.S. Council on Environmental Quality, National Technical Information Service, PB-210 734, 1972.

21. The Mitre Corporation, National Environmental Indices: Air Quality and Outdoor Recreation, Prepared for U.S. Council on Environmental Quality, National Technical Information Service, PB-210 668, 1972.

22. Richard Andrews, "A Philosophy of Environmental Impact Assessment", Journal of Soil and Water Conservation, September/October 1973.

23. William Lord and Maurice Warner, "Aggregates and Externalities: Information Needs for Public Natural Resource Decision-Making", Natural Resources Journal, 13(1):106--117, January 1973.

24. Bruce Bishop, "An Approach to Evaluating Environmental, Social, and Economic Factors in Water Resources Planning", Water Resources Bulletin, 8(4):724--734, August 1972.

25. Eugene P. Odum et al., "Totality Indices for Evaluating Environmental Impact: A Test Case: Relative Impact of Highway Alternatives", Institute of Ecology, University of Georgia, March 1973.

26. Norbert Dee et al., "An Environmental Evaluation System for Water Resource Planning", Water Resources Research, 9(3):513--535, June 1973.

27. U.S. Water Resources Council, "Water and Related Sand Resources: Establishment of Principles and Standards for Planning", Federal Register, 38(174), September 10, 1973.

28. Richard Andrews, "Comments on Environmental Evaluation Systems for Water Resources Planning", by Norbert Dee et al., Water Resources Research, April 1974.

29. U.S. Senate Subcommittee on the Oceans and the Atmosphere, Hearings on Ocean Pollution, June 12, 13 and 28, 1973 (see particularly testimony by Erman Pearson), Document 93-146, Government Printing Office, Washington, D.C.

30. Association of Metropolitan Sewage Agencies, Proceedings of the Conference of Government Representatives on Discharges to the Pacific Ocean from Municipal Wastewater Treatment Plants, July 12 and 13, 1973, San Francisco, Published by the Association of Metropolitan Sewage Agencies, Seattle, 1973.

31. Enviromedia, Inc., and Steinitz-Rogers Associates, Inc., Natural Resource Protection Study, Prepared for the Metropolitan Council of the Twin Cities Area, St. Paul, November 1970.

32. R. F. Tomlinson, Editor, Geographical Data Handling: Symposium Edition, Volume I, International Geographical Union Commission on Geographical Data Sensing and Processing, UNESCO/IGU, Second Symposium on Geographical Information Systems, Ottawa, August 1972.

33. James Pepper, An Approach to Environmental Impact Evaluation of Land Use Plans and Policies: The Tahoe Basin Planning Information System, Department of Landscape Architecture, University of California, Berkeley, 1972.

34. Washington State Department of Natural Resources, Division of Surveys and Marine Land Management, Washington Marine Atlas, Volume I, Olympia, 1972.

35. W. L. Fischer et al., Environmental Geologic Atlas of the Texas Coastal Zone--Beaumont-Port Arthur Area, Bureau of Economic Geology, University of Texas at Austin, 1973.

36. California Department of Navigation and Ocean Development, Comprehensive Ocean Area Plan, Sacramento, May 1972.

37. Marion Clawson and Charles Stewart, Land Use Information: A Critical Survey of U. S. Statistics, Including Possibilities for Greater Uniformity, Resources for the Future, Baltimore, 1965.

38. Earth Satellite Corporation, Land Use Indicators of Environmental Quality: An Examination of Existing Federal Data and Future Needs, Prepared for U.S. Council on Environmental Quality, National Technical Information Service, PB-211 399, 1972.

39. H. G. Goodell et al., Environmental Application of Remote Sensing Methods to Coastal Zone Land Use and Marine Resource Management, University of Virginia, Department of Environmental Sciences, 1972.

40. American Society of Photogrammetry, Potomic Region, Proceedings of a Symposium on Coastal Mapping, American Society of Photogrammetry, Falls Church, Virginia , 1972.

41. Tampa Bay Regional Planning Council, Shoreline Resource Development, St. Petersburg, April 1972.

42. Association of Bay Area Governments, Regional Ocean Coastline Plan Summary, September 1973.

43. Chicago Park District, The Lakefront Plan of Chicago: A Summary Report, July 1973.

44. Milo Smith and Associates, Inc., Planning Inventory, Volume I: Counties and Cities, December 1972; Planning Inventory, Volume II: Counties and Cities, December 1972; Planning Inventory, Volume III: Statewide and Regions, December 1972.

45. Alan Altschuler, The City Planning Process: A Political Analysis, Cornell University Press, Ithaca, 1965.

46. Leeds, Hill and Jewett, Inc., California Small Craft Harbors and Facilities Plan, Prepared for the California Department of Parks and Recreation, Division of Small Craft Harbors, March 1964.

47. California Department of Parks and Recreation, California Coastline Preservation and Recreation Plan, Sacramento, August 1971.

48. California Department of Fish and Game, California Fish and Wildlife Plan, I and II, Sacramento, 1966.

49. California Resources Agency, California Protected Waterways Plan: Initial Elements, Sacramento, 1971.

50. Martin Brittan, Marine Resources for California Higher Education: Phase 2, Prepared for California Coordinating Council for Higher Education, 1972.

51. G. Angus Hills, Developing a Better Environment: Ecological Land-Use Planning in Ontario--A Study of Methodology in the Development of Regional Plans, Ontario Economic Council, Toronto, 1970.

52. Maine State Planning Office, Coastal Planning Group, The Penobscot Bay Resource Plan, Augusta, 1972.

53. Florida Coastal Coordinating Council, Florida Coastal Zone Management Atlas: A Preliminary Survey and Analysis, Tallahassee, 1972

54. San Francisco Bay Conservation and Development Commission, San Francisco Bay Plan, 1968.

55. Michigan Department of Natural Resources, A Plan for Michigan's Shorelands, Lansing, 1973.

56. California Advisory Commission on Marine and Coastal Resources, The Review of the California Comprehensive Ocean Area Plan, Sacramento, 1972.

57. William Miernyk, The Elements of Input-Output Analysis, Random House, 1965.

58. Walter Isard et al., Ecologic-Economic Analysis for Regional Development, The Free Press, 1972.

59. Kingsley Haynes and Jared Hazleton, Establishment of Operational Guidelines for Texas Coastal Zone Management: Interim Report on Economics and Land Use, Division of Natural Resources and the Environment, University of Texas, 1973.

60. Theodore Collin et al., Impact of Major Economic Change on a Coastal Rural Economy: A Large Aluminum Plant in Chatsop County, Oregon, Agricultural Experiment Station, Oregon State University, 1972.

61. William Strang, Recreation and the Local Economy: An Input-Output Model of a Recreation-Oriented Economy, University of Wisconsin Sea Grant Program, Report 71-204, 1970.

62. James Hite and Eugene Laurent, Environmental Planning, an Economic Analysis: Applications for the Coastal Zone, Praeger, 1971.

63. Bostwick Ketchum, Editor, The Water's Edge: Critical Problems of the Coastal Zone, MIT Press, 1972.

64. John Clark, Coastal Ecosystems: Ecological Considerations for Management of the Coastal Zone, The Conservation Foundation, 1974.

65. Howard T. Odum et al., Coastal Ecological Systems of the United States, The Conservation Foundation, Republished in 1974.

66. Center for Natural Areas, Smithsonian Institution, Planning Considerations for Statewide Inventories of Critical Environmental Areas, U.S. Army Corps of Engineers, 1974 (In Print).

67. Sidia Selkregg, Editor, Environmental Atlas of the Greater Anchorage Area Borough, Alaska Resources and Sciences Services, Arctic Emvironmental Informationand Data Center, University of Alaska, 1972.

68. Glenn Akins, Coastal Wetlands of Oregon, Prepared for the Oregon Coastal Conservation and Development Commission, Florence, 1973.

69. Thomas Walton and Ruth Patrick, Editors, "The Delaware River Estuarine Marsh Survey", The Delaware Estuary System, Environmental Impacts and Socioeconomic Effects, National Science Foundation, 1973.

70. Reed and D'Andrea, Inc., Conservation Priorities Plan of the Coast of Maine, in cooperation with the Center for Natural Areas, Smithsonian Institution, 1973.

71. Luisiana Advisory Commission on Coastal and Marine Resources, Louisiana Wetlands Prospectus, Baton Rouga, 1973.

72. Joel S. O'Connor et al., "Environmental Illustrations of the Use of SYMAP, A Computer Mapping Program," Marine Technology Society Journal, 7(8), 1973.

73. Leonard Ortolano and Philip Brown, Jr., The Movement and Quality of Coastal Waters: A Review of Models Relevant to Long Island, New York, The Center for The Environment and Man, Inc., Hartford, 1971.

74. Tracor, Inc., Estuarine Modelling: An Assessment of Capabilities and Limitations for Resource Management and Pollution Control, U.S. Environmental Protection Agency, 1971.

75. Earl Flowers and A.W. May, Computer Systems Approach to Environmental Protection, Planning and Management: Malibu Watershed, Water Resources Research Center, University of California, 1972.

76. R.C. Ward, Small Watershed Experiments: An Appraisal of Concepts and Research Developments, University of Hull Press, England, 1971.

77. Theodore Schultz and Nancy McMahon, Noise Assessment Guidelines, U.S. Department of Housing and Urban Development, Washington, D.C., 1971.

78. Alvin W. Drake et al., Analysis of Public Systems, MIT Press, Cambridge, 1972.

79. Martin Redding, Aesthetics and Environmental Planning, U.S. Evironmental Protection Agency, Report 600/5-73-1009, 1973

80. Thomas Dickert, "Methods for Environmental Impact Assessment: A Comparison," Environmental Impact Assessment: Guidelines and Commentary, University Extension, University of California, 1974.

81. Douglass Lee, "Requiem for Large Scale Models," Journal of the American Institute of Planners, May, 1973.

82. J.G. Gosselink et al. "The Value of Tidal Marsh," Working Paper Number 3, Urban and Regional Development Center, University of Florida, 1973.

83. R.M. Pope and J.G. Gosselink, "A Tool for Use in Making Land Management Decisions Involving Tidal Marshland," Coastal Zone Management Journal, 1(1), 1973.

84. Robert Stoevener et al., Multi-disciplinary Study of Water Quality Relationships: A Case Study of Yaquina Bay, Oregon, Agricultural Experiment Station, Oregon State University, Corvallis, 1972.

85. G.M. Brown and Judd Hammack, "A Preliminary Investigation of the Economics of Migratory Waterfowl," Natural Environment: Studies in Theoretical and Applied Analysis, Resources for the Future, 1972.

C. Geographic Areas of Particular Concern

1. Introduction

This discussion of geographic areas of particular concern will consider criteria for delineating these areas; define representative areas; discuss procedures for designating areas of particular concern; and conclude with a discussion of geographic segmentation.

As discussed in earlier sections, the planning process requires establishing preliminary boundaries and developing inventories of uses and their impacts on coastal waters and of resources. The inventories can then provide a basis for designating and appraising geographic areas of particular concern by:

- applying one or more of a set of directly applicable selection criteria (e.g., physical uniqueness or cultural significance); and
- determining the relative scarcity or other measures which derives from reconciling available resources with desires and demands.

The sequence of graphs shown in Figure 1 illustrates the process by which the measure of the scarcity of resources can be derived. Reading from the top down, the first graph depicts the results derived from an initial inventory stage. Two types of inventories are produced. One of these covers uses--labeled activity inventory; the relative sizes of the blocks in the first graph (1 through 5) is indicative of the current amount of each activity. The second type of inventory is an analysis of demand; the envisioned needs for each activity modified to represent the ultimate desires.

Having defined the activity inventory and desires, it is possible to move to the next step portrayed by the second graph in Figure 1--that of equating activities to resources. Each unit of activity in the inventory, for example, might use one unit of resource A, one of resource B, and one of resource C. Similarly, the inventoried amount of activity 2 might use one unit of resource A and one of D, and so on. The ned result is an expression of the impact of inventoried and desired activity on the use of and the needs for resources (A,B, etc.).

The significance of uses and needs of resources depends upon the availability of the appropriate types of resources. Thus, in the bottom graph of Figure 1, an inventory of resources is reconciled with the uses and needs of these resources and geographic areas of particular concern equate to bounded areas subject to some degree of scarcity. Hence, the difference which results between resources supply and demand is one basis for areal designation (see Section D of this Chapter, Priority of Uses). The inventory of activities should include those whose impact modifies the resource base either by direct change in carrying capacity (the ability of areas to absorb an impact) or because of spillover effects (the effect that an activity has upon surrounding areas or activities).

In this discussion geographic area means an area whose perimeter is defined by specific lines on a map. The precision with which the lines are defined should be determined by the way regulations are to be implemented and the needs for legal defensibility.

Geographic areas of particular concern do not have to fill the entire coastal zone, but nothing appears to preclude calling the entire coastal zone a geographic area of particular concern. If this were the case, however, the concept would lose its sensitivity as an indicator of unusual focus. Focusing attention on areas that should receive special management attention in this way could reduce chances for errors of omission and could provide an additional mechanism, with priorities and other devices, for exercising management control. Geographic areas of particular concern, defined as such for different reasons,

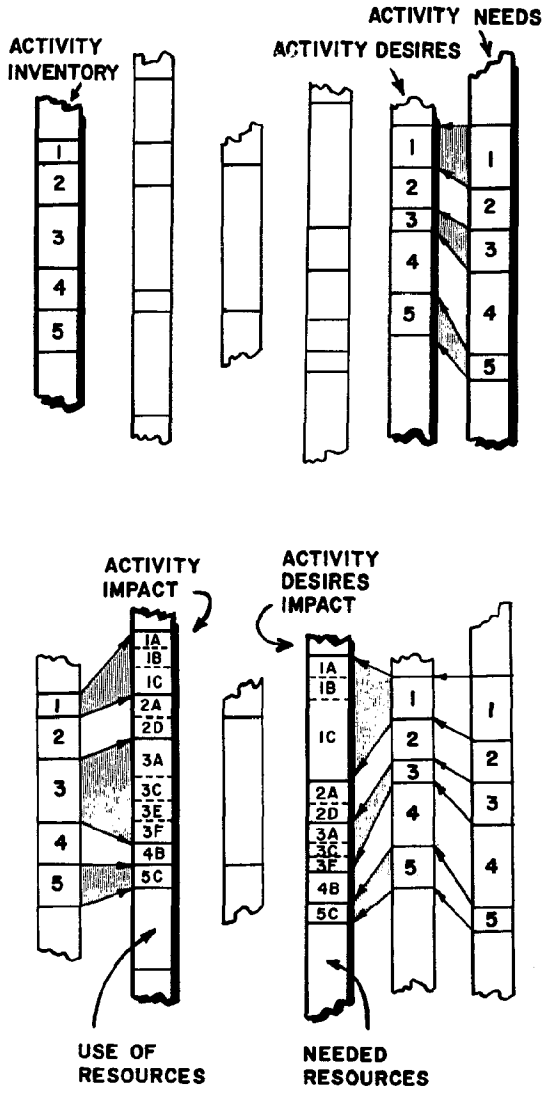


FIGURE 1

* GEOGRAPHIC AREAS OF PARTICULAR CONCERN EQUATE TO BOUNDED AREAS SUBJECT TO:

1. RESOURCES FOR WHICH DEMAND (FOR ANY REASON) EXCEEDS SUPPLY.
2. ACTIVITIES FOR WHICH DESIRES EXCEED AVAILABLE RESOURCE BASE.
3. ACTIVITIES FOR WHICH THE RESOURCE BASE IS NATURALLY LIMITED OR UNIQUE.

might partially or totally overlap. For example, an area might be a unique habitat and be historically significant as well (as shown in Figure 2, below).

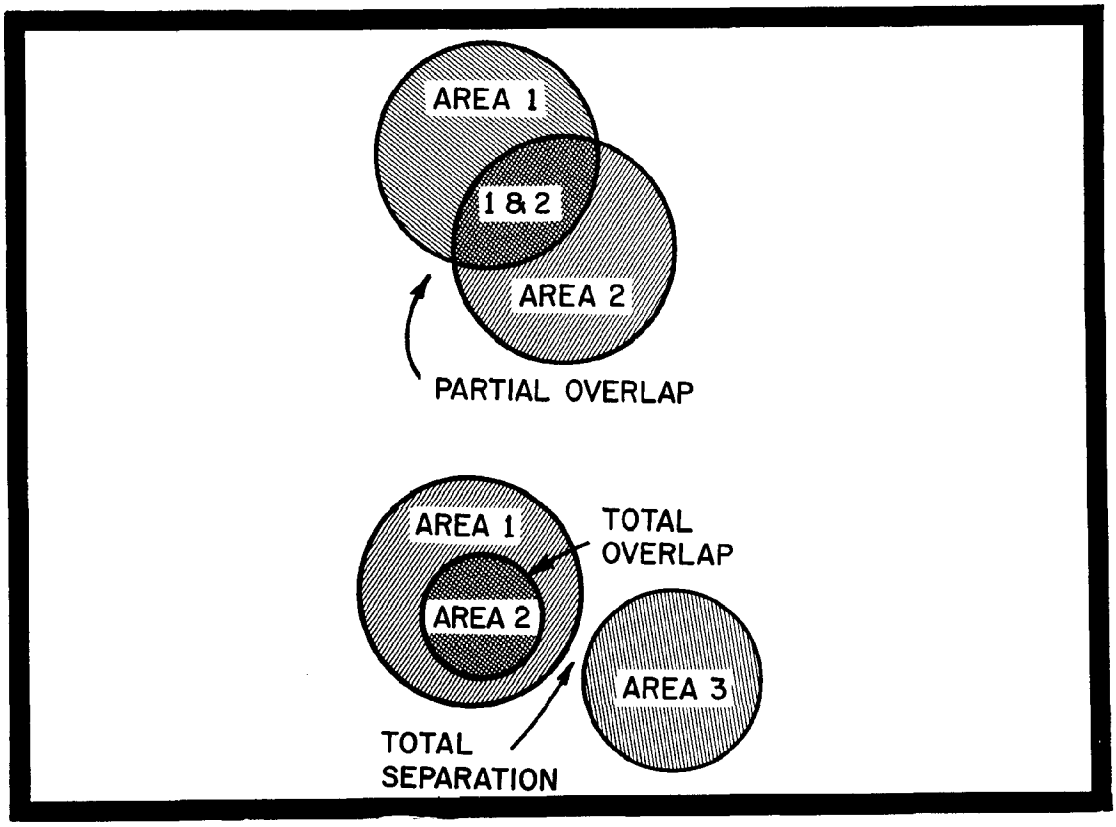


FIGURE 2

Another site might have high natural productivity and also be part of an area of significant hazard if developed. These overlapping areas would not cause a problem, however, because their designations would be determined by priority assignment (see Section II-D, Priority of Uses).

2. Criteria for Delineating Areas of Particular Concern

Criteria for delineating areas will vary widely from state to state, and even within parts of a single state. The Section 305 regulations suggest three basic criteria (920.13): (1) areas with significant natural values--among these physical or scenic; (2) transitional areas where either restoration or further development is called for or intensely developed areas where other modifications may be necessary; and (3) areas which are threatened for various reasons or are already scarce.

When a state begins to develop delineation criteria, it should consider first existing plans and commitments; substate and multi-state regional interests; national interests; economic value of various areas, now and potentially; and public consensus or degree of controversy.

Several techniques are available for establishing broad criteria; among these are supply/demand analyses, public hearings; surveys; legislative mandates; and legal precedents from analogous situations in other jurisdictions.

Before examining the relationships among each of these criteria and techniques in greater detail, we shall discuss some general principles of delineation.

Identifying areas of particular concern is not a one-shot task. States must expect changes to occur as man and the coastal zone interact. Controversies and issues will come and go (e.g., the energy crisis, the ecological crisis, offshore ports or oil); life style values will change; and technology will created new opportunities and problems (e.g., coastal protection, transportation). Although states should try to anticipate these effects, the identification process they select should provide sufficient flexibility to incorporate change when the necessity arises.

States should also consider three qualities which are implicit in most delineation decisions:

- threshold--closeness in time of an area to change from one character to another (e.g., what would be the impact of one more power plant, the impact of removing an additional million gallons per day from watershed discharge?);
- rate of change--from the viewpoints of quality and quantity, with what rapidity is change in a given use altering the resource base (e.g., acres/year of marsh being lost to development); and
- potential irreversibility--recognition of the need for immediate action because of a potentially irreversible commitment to one use instead of another and the corresponding potential inability to be taken from one use and put to another (e.g., filling a saltmarsh for building purposes; acting to avert catastrophes--such as imminent collapse of structures from natural or man-induced processes; losing access to an area due to imminent commitment to a conflicting use).

When an area exhibits all three, or even two of these qualities, it should obviously have priority over other areas which exhibit only one. Further, these qualities may well be reflected in criteria states select for area delineation.

States should recognize that the criteria above are expressed in very broad terms; they are not exhaustive. They do, however, represent a range of perspectives without which area delineation would be incomplete. Without reducing the process to the absurd, it is desirable to include as many points of view as possible which bear upon the delineation process.

Finally, assigning weight to criteria is vital because most areas of a coastal zone will satisfy more then one selection criterion. It is therefore necessary to think in terms of threshold values that lead to delineation. The methods of ranking discussed in the previous section of this chapter, Permissible Uses, also apply in area delineation.

3. Identifying Areas of Particular Concern

States should give priority in their coastal zone planning to identifying the three kinds of areas of particular concern mentioned above: (1) areas with significant natural values; (2) transitional areas where further development or restoration are called for; or intensely developed areas where modifications may be necessary; and (3) areas which are threatened for various reasons or are already scarce.

Areas with significant natural values: These are areas in which the nature of the resources, their present or potential uses, and their relative abundance are particularly susceptible to the timing of potential changes or irreversible commitments to one use over another.

A state can only determine the significant natural value of a given area after it has made a thorough inventory of the nature of the area's resources and analyzed their abundance. Suggestions for elements the states should consider in making these inventories appear in several sources.[1,2,3]

As well as considering natural and cultural features, the state should also consider the significance or importance of natural values in terms of relative measures--among these scarcity, usefulness, and threat timing. The state must be careful in identifying these areas so that it does not overlook an otherwise small factor which is essential to a larger natural system, or which is subject to cumulative effects from small increments of change. An example of this would be small additions of non-biodegradable chemicals which can cause cumulative contamination effects and thus destroy the value of the resource for man.

Designating an area with significant natural values may require expert evaluation and perhaps lengthy studies. For these reasons, it may be advisable or necessary tentatively to define characteristics of areas or even entire areas on the basis of overestimations of significance. Later studies may enable the state to classify these tentatively designated areas more accurately.

As examples of the complexity of factors which can enter into the designation process, consider the following:

- If it were known that a given square mile of eel grass beds supported large numbers of wild geese (brant) moving back and forth on a flyway, this would give the acre of grass a certain natural value. If the grass beds were the only ones, or the bulk of those present in the state, they would take on a particular and higher significance. And if filling or reclamation were proposes for that area within the next few months, the grass beds would attain yet a higher level of significance.
- If the plants or animals in an area are rare or endangered, then the value of that area would be higher than those surrounding it. Or if an area supported animals economically valuable to man, that would raise its value. For example, an area that supported commercially desirable scallops would be of higher value than one which supported primarily marine worms and tunicates.
- Barrier beach systems and tidal flats serve as lines of defense that dissipate wave energy which attacks the shoreline--an important natural value. Imminent development which were to threaten to modify that capability would increase the significance of the resource under discussion as an area of particular concern.

These are only examples. States will obviously have other situations to consider if they weigh the various factors we discussed above.

Transitional and intensely developed areas: Transitional areas are areas in which change is actively and perceptibly taking place; examples would be the accelerated residential development around the perimeter of San Francisco Bay and Rehobeth Bay. Intensely developed areas are those areas subject to the pressure of major multiple use conflicts; examples of these would be normal urban waterfront and the beach communities in Los Angeles County.

Identifying transitional or intensely developed areas of particular concern should be based on need or demand consistent with area-wide objectives. The Section 305 regulations suggest reclamation, restoration, and public access as needs states may want to address. But action on these areas could occur over an extended period of time; it is difficult to conceive of a situation, for example, where reclamation is needed immediately or where restoration cannot wait. Public access, on the other hand, may be more time-dependent. For example, if a road were built across an area as a means of public access to coastal waters, the change would be immediate. Therefore, the delineation process here should receive more rapid attention.

- Transitional areas: Within this category of delineation, states should designate areas for restoration and reclamation. Circumstances states should consider when they identify these areas include:

(a) areas where physical alterations will enhance or improve the quality of the resource base. This would include areas of deterioration or blight--decaying waterfront facilities, areas of environmental degradation that could benefit from man-induced changes like water circulation to control eutrophication, areas that require shoreline expansion, open space, or offshore space when allowed within the bounds of environmental impact and is in the public interest; and

(b) areas where the exercise of regulation, control, and other management skills can interrupt a trend or a transition to an undesirable state by providing services, or by modifying zoning to control visual appearances, population density, and other similar activities.

Access patterns are also frequently tied to or a function of rate of transition and intensity of development and should therefore receive special recognition as areas of particular concern. Factors states should consider in identifying access pattern areas include requirements to satisfy needs associated with physical movement and with visual experiences.

- Intensely or potentially intensely developed areas: Planners frequently encounter a basic conflict in identifying these areas--whether to have continued commitment and greater local impact or commitment of a new area and lower but wider-spread impact. The first frequently results from intensifying uses within an area. It may also result in economies of scale and decreased transfer costs. The second is characterized by the real estate developer who seeks uncluttered or aesthetically pleasing areas for his expanded activities or by the decision-maker's need to consider safety as a factor in dispersing pipeline corridors across the coastal zone rather than concentrating them in one area.

Methods and rationale for locating intensive development outside the management zone, for example, will frequently depend on the economic trade-offs inherent in transportation costs, tax costs, and the costs of services.

Methodologically planners could analyze user requirements for coastal zone resources, examine traditional site preferences, examine the effects of clustering on use types, and identify alternative means for accomplishing the use objectives.

The rationale for making a choice between intensive and extensive development would probably depend on results of considering factors like the amount of resources available, the assimilative capacity of the resources for relevant kinds of impact, and economic considerations similar to those described above. The extent of environmental damage, availability of resources, dependence upon coastal zone resources, and societal considerations must all enter into the selection process. Three examples may help put these factors in perspective:

(a) much less damage may result from expanding an existing refinery than from building a new one in a pristine area because of areal requirements, effluent loads, and intensity-of-use effect;

(b) intensive development for power generation may have entirely different (and less severe) impacts than intensive residential development; and

(c) recognizing the need for access may facilitate defining areas particularly suitable for establishing transportation corridors to non-urban areas. In this case, development would spread over a wider segment of the non-urban areas.

Generally, the feasibility of intensive development should be carefully examined for environmental impact on the coastal zone because of the susceptability of such areas to the loss of public access and open space.

Immediacy of need: In addition to areas undergoing physical, economic, or social change, there are potential areas of change subject to political decisions, or the subject of public controversy. These should receive priority treatment to provide the decision-maker with the best information available.

Determining immediacy of need requires considerable investigation into the existing and proposed plans for the area.

But before one can determine immediacy of need, one must determine need. A need may represent an essential ingredient in achieving an objective; for example, a corridor for public access is needed so the demand for swimming and fishing can be met. Effective demand in this case is determined by the extent that present facilities fail to accommodate those who are willing to pay for swimming and fishing opportunities.

Unsatisfied demand may be defined as a demand for use opportunity which exceeds supply where use opportunity is the available supply of the use in question. The supply may depend on the space available for activities on lands and waters and the amount of such activities these natural resources will support.

Having determined whether or not a need exists, one then looks for the threats from present or proposed uses which would cause modifications that would prevent fulfillment of the need. For example, an Army Corps of Engineers' proposal to drain a saltmarsh starting in 1980 would effectively destroy a use program to develop the marsh as a waterfowl flyway stop. To avoid this, the state would have to act immediately to protect the saltmarsh. But if no new uses were proposed for the marsh, then it could receive a lower priority for action.

Other relevant criteria: In the preceding section on permissible uses several criteria were discussed which are also appropriate to the delineation of areas of particular concern; these will therefore only be cited briefly.

- Existing plans for and commitments of areas to specific uses are usually available in government documents (federal, state, regional, and/or local). Although prior designation is not sacrosanct, it must certainly be considered as a starting point.
- National interest is one aspect the Act specifically requires states to consider. Potential sites for offshore gas and oil recovery and the corresponding onshore locations would be one example of areas of particular concern states must consider in the national interest.
- Regional interests are not included under permissible uses, but states should consider them as part of their area delineation process. Regional interests can be either multistate or substate. Multistate interests are frequently based on shared water resources; river basin commissions are an example. Pollution loads, withdrawals, and power plant sites are also frequently problems of mutual concern. And port authorities and transportation authorities are growing areas of regional interest. States will probably find they will generally undergo some pressure to designate these types of areas for their particular concern.
- Economic value as a criterion may enter into many area considerations. We have discussed above its role with respect to areas especially suited for intensive development. Additional considerations include the role of economic values as a criterion for less well defined situations, among which would be, for example, evaluating the contribution of a saltmarsh to the economy of an area. The inability to establish accurately a monetary value for an area should not eliminate using this criterion because weighted indices (see discussion in II-B) can provide an alternative for incorporating some measure of value in the overall assessment.

. Public consensus and degree of controversy as criteria are not necessarily measures of demand, but rather are measures of commonality of purpose. If by referendum, hearing, or survey the public manifests a consensus concerning suggested or proposed uses for a coastal area, for any reason, then the state should consider the area as a candidate for delineation. (See Chapter V, Public Participation, for additional discussion.) States should also remember that in defining consensus, minority positions are frequently lost; degree of consensus is, therefore, also necessary to measure the intensity of controversy.

These are some of the more common criteria. Identifying and specifying other criteria for a variety of situations as these will be an important part of the state's coastal zone program development process.

4. Representative Area Types

The Section 305 regulations suggest criteria for identifying eight categories of areas (920.13). Each of these will be discussed briefly to provide examples (common and uncommon) of what states should consider in their designation process.

Unique or fragile areas: Fragile, as it is discussed in this document, means susceptability to damage. Uniqueness, in contrast, is associated with a frame of geographic reference--unique state-wide or nationally. Uniqueness is also the final level of scarcity.

Unique or fragile areas can, therefore, fall into a variety of categories. These include areas which are unique because of their locations (e.g., a saltmarsh in California versus one in Georgia) or because of their physical characteristics (e.g., a seamount versus a submarine canyon). Typical of fragile areas (i.e., areas which can easily be endangered) are those areas with physical characteristics like small or border-line size and corresponding susceptability to overuse (e.g., tide pools, mud flats, nursery areas). Much depends on the state's developing a thorough knowledge of what biota are present in these areas and determining what their environmental requirements are--especially factors that limit growth and reproduction.

Uniqueness and fragility may also be subjective in terms of an area's visual characteristics. One seascape may be ruined aesthetically by the presence of an oil drilling tower while another might not be significantly affected.

Other unique or fragile areas for which states should determine criteria are those which are areas of concern for their conservation or ecological values. Among the relevant questions in these cases are:

. How many similar areas are there in the state and what function do they serve in their natural state?
. How large an area is involved and what uses can it serve and still maintain its integrity?
. Is there a need for immediate action to protect it?
. Based on the replies to these questions, is it worth preserving?

There are many areas of historical significance in the coastal zone. A few from the many and obvious examples are Plymouth Rock, the Cabrillo Monument, Mystic Seaport, and New Castle in Delaware. The zone also boasts many sites of cultural value. Some are sites of archaeological significance as remnants of early coastal Indian settlements. Others are communities that have maintained their integrity for many years: Cajuns of the Louisiana bayous; Portugese and Italian fishing colonies of California; and fishing villages of Maine and Massachusetts, to name a few. In identifying these areas states should review the work done under the sponsorship of other federal agencies, historical societies,

expert testimony, and anthropological and archaeological societies and their publications.

Areas of high natural productivity: States should consider areas of high natural productivity, both flora--e.g., marsh grasses, algae--and fauna (e.g., finfish, shellfish, waterfowl, mammals, reptiles). Such areas are not, however, restricted to living resources. Of equal importance are non-living resources (e.g., sand, oil, gas, phosphorite, salt and bromides).

Identification schemes should also recognize the difference between areas of high natural productivity containing renewable and non-renewable resources, a partitioning equally applicable to living and non-living matter. In the instances of non-living resources, for example, productivity may be limited for the non-renewable resources--oil, gas, and sand. On the other hand, phosphorous ores, salt, and bromine are, for practical purposes, inexhaustible. The classification should reflect the practicalities of renewability.

In the case of living resources, those which are classified as renewable would be sustained yield populations; while living resources that are non-renewable would be sub-critical populations.

The essentiality of a habitat area should not be construed as a classification which implies exclusive use. These can also be areas identified as having a unique value for a species through topographic configuration, environmental characteristics, or dependence upon a limited flora or fauna nutrition (e.g., brant/eel grass, sea otter/kelp; coral beds in Florida and kelp beds in California). Rookeries and bird nesting areas/fishing grounds or rock outcrops are also examples. An area's uniqueness may also be bases on the environmental characteristics or its need for the survival of rare or endangered species.

Planners will find classification factors and techniques through state agencies and through reports resulting from academic research. This material should be examined for relevance and background. The subjects of such studies have included, for examples, Louisiana marshes[4], Georgia tidemarsh[5], Massachusetts tidemarsh[6,7], mangrove swamps[8], and flyways[9].

Areas of substantial recreational value: States should answer a series of questions that will help develop adequately criteria for designating areas on the basis of their recreational value:

- What type of recreational activities are in demand and is there an immediate need for certain areas or activities? This should include demands for private as well as public areas and tourist attractions as well as those local populations use.
- How are existing recreational areas being utilized?
- What characteristic land types are necessary for each activity?
- What are the areas best suited for the recreational activities and what conflicts exist between existing uses of those areas and the desired recreational uses?
- Where can use conflicts best be resolved and what areas are then best suited for recreation?

In addition to these criteria, others which could incidate substantial value are intensities of use (frequently a measure both of inherent suitability and of accessibility) and direct relationship to a limited recreational specialty (e.g., soaring, surfing).

Current use is frequently the only reasonable measure of which new areas a state might develop and how it might do so, although more indirect measures--willingness to travel, to pay, to wait, and to invest in participating equipment--could also provide some insight.

Developments and facilities dependent upon utilization of or access to coastal waters: The uses generally considered to be dependent upon coastal waters are transportation, commercial fishing, marine recreation, and marine research.

In the case of transportation, identification criteria include factors like proximity to deep water; suitability for constructing offshore facilities; presence of inter-modal transportation links; zoning compatibility; and the capacity of the natural system to absorb the stresses transportation activities induce.

In establishing criteria for marine recreation, states should decide whether they should include policies which consider second home developments dependent on direct access to or utilization of coastal waters. What states do decide, to whatever extent, will be reflected in their choice of priorities in permissible use criteria.

For further discussion of dependency see Section II-B, Permissible Uses, and Section II-D, Priority of Uses.

Areas of unique geologic or topographic significance: The significance and uniqueness of geologic or topographic features are primarily measured by their physical attributes such as soil types and conditions, relative elevations, and presence of aquifers. The presence of mineral deposits of all types, especially those with economic potential for mining, can also serve to identify unique geologic and topographic features. Other physical measures to use include bathymetry (e.g., deepwater areas for supertanker facilities), geomorphology, substrate and topographic orientation.

Another factor that might affect the significance of an area's attributes is its location relative to the foci of use demands for its attributes. For example, an area that is topographically and geomorphicologically suitable for a power plant and is close to the market for power might qualify as an area with unique significance for that purpose because of its geology and location. On the other hand, an area with the same physical attributes, but located at a distance from markets for power, might not be economically feasible as a site for a power plant. In this case the relative location of the site will serve as a qualifier in determining the significance of the area's attributes.

States will find helpful information to assist them in establishing such criteria in a number of sources. Documents published by the Coastal Engineering Research Center of the U.S. Army Corps of Engineers[10]; by the National Ocean Survey[11]; and by states--among these, California[12] and Texas[13] which have already studied certain aspects of this problem.

Areas of urban concentration: Areas of this type are characteristically subject to intense competition for conflicting uses because commerce, industry, recreation, and residential uses can often be mutually exclusive. Ecological values have frequently already been sacrificed. Visual amenities for the residents of such areas can be high if they can get close enough to the water's edge to avoid having the view usurped by anyone else. The pressures are to get as close as possible to the water's edge, thereby contributing substantially to the potential hazards of erosion and flooding. As a result, potentially high costs and substantial effort may be required to stabilize and to protect the coastal zone area. Selecting appropriate areas should obviously reflect these numerous concerns.

For the most part, identifying the areas falling into this category will be easy. Usually population density and land values are reasonable indicators of the urban presence. The precedent of controversy is also a good indicator of competitive use pressures and of an area of particular concern; this controversy

generally will have manifested itself in hearings, litigation, laws allocating uses, and media exposure. Census information might also help states identify urban areas.

States could look at the need for restoration, reclamation, and increased access as other indicators of urban concentrations.

Areas of significant hazards if developed: Certain natural events, though sometimes infrequent, can result in catastrophic impacts upon the stability of natural systems. These impacts are also often felt by man, either directly or indirectly. With this in mind states should consider such phenomena as flooding (both coastal and riverine), tsunamis, earthquakes, and mud slides when developing designation criteria. Recognition of the significance of such events is reflected by various government planning and management actions (e.g., Department of Housing and Urban Development's flood insurance program, Hawaii's tsunami ordinance, Florida's hurricane flooding area designations, and the consideration of seismic-related mass movements in California's planning programs).

Less dramatic, but more common hazards occur in those areas subject to erosion, storm-induced or not; mud slides; and areas where beach dunes or marshes, when left undisturbed, absorb the energy from wave action or impede the flow of damaging high waters. The National Shoreline Study of the U.S. Army Corps of Engineers; specific studies conducted by the Corps' district offices; and information from the National Flood Insurance Program are valuable references for identifying potential trouble spots.

Other areas of natural hazard states should consider are those subject to the presence of disease carriers, insect or animal, or those that harbor biting or stinging animals or insects. These include mosquito, biting fly, jelly fish, and some rodent habitats.

Coastal zone sites subject to subsidance because of sub-surface withdrawal or tectonic activity and sites subject to aquifer contamination also typify areas which should be included for their particular concern.

States should also consider areas of man-made hazard (e.g., airport approaches, buffers around plants producing toxic or dangerous volatiles) in designating such areas of concern.

Areas needed to protect or maintain coastal resources: In addition to designating specific areas as necessary to maintain the natural characteristics and values of coastal resources, areas may also be required to buffer the effect of human intrusions in the coastal zone, such as urban concentrations and recreation. The buffering effect may be considered from two viewpoints; depending on the nature of the coastal resource. From one perspective it might be necessary to prevent man's intrusion from impinging upon and destroying an ecologically sensitive or valuable natural resource; from the other viewpoint it may be necessary to dedicate a coastal resource to the activities necessary to protect man's coastal zone investments from natural hazards and forces. States will probably find it easier to commit coastal areas to this use, either for construction or for exclusion, if they designate them as areas of particular concern. The range of types of areas appropriate to this designation may include any topographic features which isolate man-made effluents, structures, or traffic from natural ecosystems for man's enjoyment of their natural state. Another type is borrow areas for beach replenishment. Also, they might include spoil disposal areas necessary to maintain navigable waterways. The effect of modifications to watershed runoff patterns on aquifer recharge areas is a classical example of cumulative impacts upon areas that are needed to maintain coastal resources; states should consider these in the designation process.

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Other geographic areas of particular concern: There are other types of areas of particular concern for which states should consider establishing criteria.

One example would be a situation where the coastal conditions are particularly suited for the growth of special agricultural and marine products or where coastal conditions substantially improve crop yields.

Among the terrestrial food crops which require special coastal conditions are cranberries, artichokes, asparagus, and wild rice. Marine products such as agar-agar and canageenan are derived from seaweed and Irish moss and certain types of seaweed are also products much in demand.

Several tree species are also dependent upon specific geographic areas of the coastal zone. Among these are coastal redwoods, Torrey pines, Monterey pines, and mangrove. Several states have areas which are conducive to the growth of such trees and should consider them in designating their areas of particular concern. Source materials which offer insight into methods of identification and analysis of these areas is available from several sources including the Forest Service of the U.S. Department of Agriculture and the Agricultural Extension Services of such states as California, Louisiana, Michigan, Maine and Florida.

5. Procedures for Designating Areas of Particular Concern

States have a variety of ways for establishing procedures for area delineation. It can be relatively simple: an executive order or legislative mandate designating an agency, creating a task force, or organizing an advisory committee with the delegated responsibility as its function. It can also be as complex as the development of a systems and procedures manual detailing the step-by-step process users are to follow in the designation process. Obviously, the state's interpretation of this requirement is related to the overall implementing structure for coastal zone management the state chooses. However, whatever choice a state makes, there are some aspects common to all approaches; the states should:

- assure adequate public participation and coordination with other agencies;
- perform an inventory of areas of significance;
- evaluate immediacy of needs by comparing inventory with known and predicted patterns of development and exploitation. This should follow priorities based

upon the combined considerations of scarcity, uniqueness, and pressure, and should specifically include recommendations initiated at local and regional as well as state levels of government. The state should draw on as much expertise as possible for this purpose: universities and special interest groups are two possible sources;

- determine feasible restoration methods; and
- evaluate economic implications of restoration options, including acquisitional or transactional costs, preservation methods, operations, and maintenance. If land is already publicly owned, perhaps only a law, regulation, or ordinance will suffice to exclude improper uses or to bring the area in question under proper management. If new funds are required, either to acquire land from private owners, or to carry out necessary work, then the public may have to support a tax increase or sale of bonds.

A standard procedure one might use would be to charge the state's coastal zone authority with responding to a public petition or an agency request, state or federal. The authority could schedule public hearings as appropriate, and the authority could determine the desirability of preserving or restoring the area in question. Action the state chose could be supportive of state or federal legislation to obtain or manage the area or, if the authority had the funds, it could acquire the area directly. The authority should serve primarily as a mechanism to determine what specific action, consistent with the state's coastal zone plan, is appropriate, and then to fund or lobby for acquisitions or other necessary steps.

A specific sequence of events might be:

- The authority, as management agency, receives a petition to act to preserve an estuary or to acquire a resource (e.g., an offshore island).
- The authority holds hearings on this petition at appropriate times and locations.
- The authority obtains the official position from the agency with jurisdiction over the resources in question if they are publicly owned, or
- The authority obtains the position of the landowner if the area is privately owned.
- The authority sponsors or performs actions necessary to develop technical information for decision-making, that is, on uses, user loads, restrictions, access factors, and other data for management.
- The authority or its designee takes steps to acquire, either by negotiation or by condemnation, to raise and/or transfer funds to appropriate agency for purchase, or for other management action.

Examples of procedures, studies and accomplishments, though not numerous, do exist. Some of the more recent ones include the work of the Florida Coastal Coordinating Council on establishing aquatic preserves[14] and the Department of Interior's studies of the value of islands[15,16,17]. The proposed Island Trust Bill sponsored by Senator Kennedy is another recently developed approach[18].

6. Geographic Segmentation

The Act permits states to develop and adopt management programs in segments "so that immediate attention may be devoted to those areas within the coastal zone which most urgently need management programs". The regulations clarify the meaning of segmentation by indicating that geographic, not functional segments, are envisioned; that is, states may develop a complete management program for a specific geographic area such as San Francisco Bay and its associated shorelands, but may not submit for segmented approval a management program controlling a single type of area or class of use (e.g., wetlands, heavy industry).

A state's decision to submit a management program in segments requires the approval of the Secretary of Commerce. Before giving his approval, the Secretary will have to be assured that the state "adequately provides for the ultimate coordination of the various geographical segments of the management program into a single unified program and that the unified program will be completed as soon as it is reasonably possible".

Pros and cons of segmentation: A segmented approach to program implementation offers both advantages and disadvantages which states should weight carefully. Segmentation can provide an opportunity to move a portion of a state's coastal area to approved program status more quickly. In areas where there are major problems or conflicts, a state could accelerate its program development to deal with such problems expeditiously; federal agencies would also be required to conduct their activities in such an area in a manner consistent with the approved program. Also, in cases where the process of program development has proceeded more rapidly in some parts of the state's coastal zone than in others, management of the more advanced areas need not be held back. Through segmentation, a state can test its management techniques in a limited area, using this experience to refine the management program ultimately implemented along the entire coastline. Such testing might well result in greater public acceptance of coastal zone management over time.

States should not ignore the potential problems of segmentation, however. Because a segmented management program must have all components of a management program for the entire state, states may find segmentation inefficient. It may not take significantly longer to develop the necessary information and authority for the entire coast than it does for a segment. For example, if each segment were to require separate legislative action, extended delays could result. States should also recognize the problems inherent in administering development and implementation phases of the program simultaneously. In addition to administrative problems, states would probably require more complicated coordinated coordinating mechanisms to manage a segmented program. Finally, states may well experience difficulties if different sections of their coastal area appear to be receiving preferential treatment.

Whether or not to segment is a subjective decision: States should give early recognition and consideration to segmentation as an implementing option. Should such a decision be made, states can then plan the timing of work tasks in such a way as to accommodate segmentation and develop the necessary coordination mechanisms.

A state could consider segmentation when:

- there is evidence of a backlog of problems;
- there is evidence of extensive controversy over certain activities or resources;
- the state has an extensive or complex shoreline; and/or
- there is evidence of similar situations in other states' coastal zone management programs.

Public hearings, petitions, and direct communication by the public with government officials are some sources of evidence to use in determining the feasibility of segmentation.

States will most readily achieve coherence and integration if the management framework clearly identifies segmentation, implementation responsibilities clearly lead to the designee for total program responsibility, and if program monitoring and reporting functions are organized to oversee the program activities in the area of segmentation.

CITATIONS

1. Center for Natural Areas, Smithsonian Institution, Planning Considerations for Statewide Inventories of Critical Environmental Areas, U.S. Army Corps of Engineers, 1974 (In Print).

2. Interagency Task Force on Environmental and Land Use Planning, Criteria for Identification of Areas of Particular Public Concern, North Carolina Office of State Planning, 1973.

3. Reed and D'Andrea, Inc., Model Inventory Methodology, Smithsonian Institution, 1973.

4. Louisiana Advisory Commission on Coastal and Marine Resources, Louisiana Wetlands Prospectus, 1973.

5. Eugene P. Odum, Fundamentals of Ecology, W.B. Saunders Company, Philadelphia, 1971.

6. Division of Marine Fisheries, Monograph Series on Marine Resources (Number 1-17), Massachusetts Department of Natural Resources.

7. John and Mildred Teal, Life and Death of the Saltmarsh, Atlantic Monthly Press, Boston, 1969.

8. Albert R. Veri et al., Rookery Bay Land Use Studies: Environmental Planning Strategies for the Development of a Mangrove Shoreline, The Conservation Foundation, Washington, 1973.

9. R.C. Murphy, Distribution of North Atlantic Pelagic Birds, Folio 14 of Series Atlas of Marine Environment, American Geographic Society, 1967.

10. David B. Duane, Sand Inventory of Offshore Waters of New Jersey and Northern New England, U.S. Army Corps of Engineers, 1969.

11. National Ocean Survey, Series of Hydrographic Charts at various scales continuously being updated.

12. State Division of Mines and Geology, Non-living Resources - Physical Environment and Resources, Appendix V, California Comprehensive Ocean Area Plan, California Department of Navigation and Ocean Development, 1971.

13. W.L. Fischer et al., Environmental Geologic Atlas of the Texas Coastal Zone--Beaumont-Port Arthur Area, Bureau of Economic Geology, University of Texas at Austin, 1973.

14. Interagency Advisory Committee on Submerged Land Management, A Proposed System of Aquatic Preserves - Report to the Trustees of Internal Improvement Trust Fund, Florida Coastal Coordinating Council, 1968.

15. U.S. Department of Interior, Islands of America, U.S. Government Printing Office, 1970.

16. Advisory Committee for "The U.S. Virgin Islands and the Sea", The U.S. Virgin Islands and the Sea: A Blueprint for Action, U.S. Government Printing Office, 1970.

17. Office of the Governor of Puerto Rico, Puerto Rico and the Sea, 1972.

18. S-3536 introduced by Senator Edward Kennedy in the Senate and HR-15081 introduced by Representative Gerry Studds in the House--in the Second Session of the 93rd Congress.

ADDITIONAL REFERENCES

General Bibliographic Notes

Bibliographic references in this section are of two types:

(1) References which deal with analytical methodology pertaining to the designation of areas with special attributes; and

(2) References which inventory or describe areas in accordance with a set of prescribed definitions. This latter grouping seldom offer much substantive discussion of the rationale behind the designation process, but are, of course, illustrative of "do" rather than "talk".

Significant Natural Values

Type (1)

1. Battelle Memorial Institute Northwest, Oregon Areas of Environmental Concern, 1973.

2. Institute for Environmental Studies, The Investigation, Description, and Recommendation of a Critical Resources Information Program for Wisconsin: Phase I Report - Concepts of Resource Definitions, Uses, and Management Criteria, University of Wisconsin-Madison, 1973.

3. Virginia Division of State Planning and Community Affairs, Critical Environmental Areas, 1972.

Type (2)

1. Bureau of Sport Fisheries and Wildlife, National Estuary Study, Volume 1-7, U.S. Government Printing Office, 1970.

2. Center for Natural Areas, Smithsonian Institution, Environmental Inventory Activities and Information Sources in 44 States, with References to Selected Literature and Individuals by Subject and State, U.S. Army Corps of Engineers, 1974 (In Print).

3. Engineering Agency for Resource Inventories, Inventory of Basic Environmental Data for Southern Louisiana, U.S. Army Corps of Engineers.

4. _____, Inventory of Basic Environmental Data for Washington, U.S. Army Corps of Engineers.

National Interest

1. Center for Policy Alternatives, The National Interest in the Coastal Zone, A study for OCZM/NOAA to be completed in the fall of 1974.

2. Senate Committee on Commerce, Proceedings of Conference on National Interest in the Coastal Zone, U.S. Government Printing Office, Available in late 1974.

Public Consensus

Type (2)

1. Andrew Collver, Public Images and Coastal Zone Management Part I: Policy Implications, National Technical Information Service, 1974.

2. David W. Fisher, Southern Rhode Island Coastal Zone Attitudes: Attitudes of Property Owners in the Southern Rhode Island Coastal Zone and Their Impact on the Coastal Environment, University of Rhode Island Sea Grant Program, 1971.

3. Northeast Markets, Inc., Maine, An Appraisal by the People, Maine State Planning Office, 1973.

4. Jens Sorensen and John Ashbaugh, A Survey of Organized Groups with an Interest in the California Coastal Zone, University of California Sea Grant Program, In Preparation.

5. Joseph M. Viladas Company, The American People and Their Environment-1973: A Study of National Opinion and Attitudes about Environmental Problems and Their Solutions, for the U.S. Environmental Protection Agency, National Technical Information Service, 1973.

Unique, Scarce, Fragile, or Vulnerable Areas

Type (1)

1. Coastal Research Corporation, Estuarine Landscape Survey and Analysis, Bureau of Sport Fisheries and Wildlife, 1969.

2. Arthur C. Moore and Associates, Bright Breathing Edges of City Life: Planning for Amenity Benefits of Urban Water Resources, Office of Water Resources Research, U.S. Department of Interior, 1971.

3. National Park Service, Part Two of the National Park System Plan--Natural History, U.S. Government Printing Office, 1972.

4. Office of Business Economics, Economic and Demographic Analysis and Projection for Twenty Estuary Economic Regions, U.S. Department of Commerce.

5. Vineyard Open Lands Foundation, A Visual Analysis of Marthas Vineyard, 1973.

Type (2)

1. Bureau of Census, Census of Population, 1970: General Social and Economic Characteristics, U.S. Department of Commerce, 1972.

2. Coastal Zone Resources Corporation, A Plan and Program for Amenities and Aesthetics in the Escarosa Pilot Area, Florida Coastal Coordinating Council.

3. National Park Service, "The Natural Landmarks Program".

4. _____, National Parks and Landmarks, U.S. Government Printing Office.

5. _____, The National Register of Historical Places, U.S. Government Printing Office, 1973.

6. L. Pesson, The Coastal Fishermen of Louisiana: Their Characteristics, Attitudes, Practices, and Responsiveness to Change, Center for Wetland Resources, Louisiana State University, 1973.

Areas of High Natural Productivity

Type (1)

1. Bureau of Sport Fisheries and Wildlife, National Estuary Study, Volume 1-7, U.S. Government Printing Office, 1970.

2. John Clark, Coastal Ecosystems: Ecological Considerations for Management of the Coastal Zone, The Conservation Foundation, 1974.

3. Philip Douglas and Richard Stroud, Editors, Proceedings of Symposium of the Biological Significance of Estuaries, Sport Fishing Institute, 1970.

4. Federal Water Quality Administration, The National Estuarine Pollution Study, U.S. Government Printing Office, 1969.

5. Massachusetts Department of Natural Resources, The Value of Massachusetts Coastal Wetlands, 1971.

Type (2)

1. S.K. Eltringham, Life in Mud and Sand, Crane, Russak, and Company, 1972

2. R. Murphy, Distribution of North Atlantic Pelagic Birds, Folio 14 of Series Atlas of Marine Environment, American Geographical Society, 1969.

3. G.P. Spinner, The Wildlife Wetlands and Shellfish Areas of the Atlantic Coastal Zone, Folio 18 of Series Atlas of Marine Environment, American Geographical Society, 1969.

Areas of Recreation Potential

Type (1)

1. R.L. Adams et al., Outdoor Recreation: A Legacy for America-Appendix A: An Economic Analysis, Bureau of Outdoor Recreation, 1973.

2. Bureau of Outdoor Recreation, Outdoor America: A Plan for Providing Recreation Opportunities to the Nation, National Technical Information Service, 1973.

3. Robert B. Ditton, The Social and Economic Significance of Recreation Activities in the Marine Environment, University of Wisconsin Sea Grant Program, 1972.

4. J. Knetsch et al., Outdoor Recreation and Water Resources Planning, American Geophysical Union, 1973.

5. Soil Conservation Service, Guide to Making Appraisals of Potentials for Outdoor Recreation Development, U.S. Deapartment of Agriculture, 1966.

Type (2)

1. Bureau of Outdoor Recreation, Potomac Estuary-A Study of the Recreation, Fish, and Wildlife Potential, U.S. Department of Interior, 1969.

2. Department of Development and Planning, The Lakefront Plan of Chicago, City of Chicago, 1973.

3. John S. Marsh, Marine Parks: An Annotaded Bibliography, Council of Planning Librarians, 1971.

4. Metropolitan Area Planning Council, Boston Harbor Islands Comprehensive Plan, Massachusetts Department of Natural Resources, 1972.

5. New England Marine Resources Information Program, Outdoor Recreation Uses of Coastal Areas, University of Rhode Island, 1971.

Facilities Depending on Coastal Waters

Type (2)

1. Atomic Energy Commission, General Environmental Siting Guides for Nuclear Power Plants, 1973 (Draft).

2. Harry C. Brockel, The Modern Challenge to Port Management, Center for Great Lakes Studies, University of Wisconsin, 1972.

3. John Clark and Willard Brownell, Electric Power Plants in the Coastal Zone: Environmental Issues, American Littoral Society, Special Publication No. 7.

4. U.S. Coast Guard, Vessel Trafic Systems: Analysis of Port Needs, National Technical Information Service, 1973.

5. Federal Power Commission, Guidelines for Protection of Natural, Historical, Scenic, and Recreational Values in the Design and Location of Rights-of-way and Transmission Facilities, 1970.

6. Institute for Water Resources, United States Deep Water Port Study, U.S. Army Corps of Engineers, IWR Report 72-8, 1972.

7. 92nd Congress, 2nd Session, Senate Committee on Commerce, Background Report on Power Plant Siting, 1972.

Type (2)

1. U.S. Army Corps of Engineers, Waterborne Commerce of the United States, "Waterways and Harbors", 1972.

2. Delaware Bay Oil Transport Committee of the State of Delaware, Energy, Oil, and the State of Delaware: Technical Report, 1972.

3. Department of Interior, Deepwater Ports--Environmental Impact Statement, 1973 (Draft).

4. Environmental Protection Agency, Statistical Summary: 1968 Inventory of Municipal Waste Facilities, 1970.

5. A.T. Kearny, Inc., Domestic Waterborne Shipping Market Analysis: Great Lakes Trade Area, National Technical Information Service, 1974.

6. _____, Domestic Waterborne Shipping Market Analysis: Domestic Ocean Trade Area, National Technical Information Service, 1974.

7. U.S. Maritime Administration, Essential U.S. Foreign Trade Routes, U.S. Department of Commerce, 1969.

8. Public Health Service, Statistical Summary of Municipal Water Facilities in the United States, U.S. Department of Health, Education, and Welfare.

Areas of Unique Geology for Commerce and Industry

Type (2)

1. American Petroleum Institute, Petroleum Facts and Figures, 1971.

2. Board of Engineers for Rivers and Harbors, Port Facilities, U.S. Army Corps of Engineers.

3. Bureau of Land Management, Final Environmental Statement for Proposed Outer Continental Shelf Oil and Gas Lease Sale for Offshore Mississippi, Alabama, and Florida, U.S. Department of Interior, 1973.

4. Bureau of Mines, Mineral Facts and Problems, U.S. Government Printing Office.

5. Division of Mineral Resources, New England Offshore Mining Environmental Study, Massachusetts Department of Natural Resources, 1973.

6. U.S. Geological Survey, U.S. Mineral Resources, U.S. Government Printing Office, 1973.

7. Malcolm S. Grant, Rhode Island's Ocean Sands: Management Guidelines for Sand and Gravel Extraction in State Waters, Coastal Resources Center, University of Rhode Island, 1973.

8. Arthur D. Little, Inc., Potential Onshore Effects of Deepwater Oil Terminals and Related Industrial Development, 1973.

9. National Petroleum Council, Petroleum Resources Under the Ocean Floor, 1969.

10. Northern Associates, Inc., "Physical Coastal and Port Characteristics and Selected Deepwater Port Alternatives", U.S. Deepwater Port Study.

11. Soil Conservation Service, A List of Published Soil Surveys, U.S. Department of Agriculture, Annually.

Areas of Urban Concentrations

Type (2)

1. Bureau of Census, Census of Population: 1970, U.S. Government Printing Office, 1972.

2. _____, Census of Housing: 1970, U.S. Government Printing Office, 1972.

3. _____, County Business Patterns: 1972, U.S. Department of Commerce, 1973.

4. _____, Statistics for Federal Regions, States, and Metropolitan Areas, National Technical Information Service, 1973.

Areas of Significant Hazard if Developed

Type (1)

1. Anonymous, Geologic Hazards and Public Problems--Conference Proceedings, U.S. Office of Emergency Preparedness, 1969.

2. CLM/Systems, Inc., Airports and Their Environment: A Guide to Environmental Planning, National Technical Information Service, 1972.

3. Hittman Associates, Inc., Guidelines for Erosion and Sediment Control, Planning, and Implementation, U.S. Government Printing Office, 1973.

4. Water Resources Council, Flood Hazard Evaluation Guidelines, 1972.

Type (2)

1. U.S. Army Corps of Engineers, National Shoreline Study, 1971.

2. John V. Byrne and William B. North, Landslides of Oregon North Coast, Oregon State University Sea Grant Program, 1970.

3. Federal Aviation Administration, The National Aviation System--A Policy Summary, U.S. Government Printing Office, 1973.

4. Francis P. Shepard and Harold R. Wanless, Our Changing Coastlines, McGraw-Hill Book Company, 1972.

5. Samuel P. Snow, Study of Guidelines for Land Management and Use of Flood-Prone Areas in Alabama, Alabama Center for Urban and Regional Planning, Auburn University, 1973.

6. Raymond Sullivan and Raymond Pestrong, Coastal Hazards at Mussel Rock, South of San Francisco, Department of Geology, San Francisco State College, 1972.

Areas for Resources Replenishment

Type (2)

1. Malcolm S. Grant, Rhode Island's Ocean Sands: Management Guidelines for Sand and Gravel Extraction in State Waters, Coastal Resources Center, University of Rhode Island, 1973.

2. John Schlee, Sand and Gravel Resources on the Continental Shelf Off the Northeastern United States, U.S. Geological Survey, Circular 602, 1968.

D. Priority of Uses

1. Introduction

Designation of priority uses is closely tied to the requirements in Section 920.12 and 920.13 of the Section 305 regulations; it should build upon the findings and conclusions the state reaches concerning permissible uses (920.12) and areas of particular concern (920.13). In this discussion, we assume that the uses the state is considering for priority designation are all permissible uses as determined under 920.12.

There are two interpretations of non-permissible uses. In the first, a use may be considered non-permissible for the state's entire coastal zone, in which case the state may not consider it for priority use designation anywhere within its coastal zone. In the second interpretation, non-permissible uses are determined for specific areas or types of environments. In this case, a state would not assign priority designations to non-permissible uses within the specific areas or environmental types, but it might consider these same uses as permissible outside of those specific areas and assign them priority use designations. For example, residential development may be classified as a non-permissible use in coastal wetlands, however, may be allowed on coastal terraces and in the latter case be given an appropriate priority designation.

The Section 305 regulations designate two types of geograhic areas which are closely related:

. "geographic areas of particular concern" in 920.13; and

. "specific geographic areas throughout the coastal zone" in 920.15.

Geographic areas of particular concern may or may not, at the option of the state, have priority uses designated for them pursuant to 920.15. Specific geographic areas throughout the coastal zone established in 920.15 must have priority uses established for them.

Specific geographic areas may include areas of particular concern, but also may include areas of no particular concern. However, if states have designated geographic areas of particular concern and then do not use them as a framework for establishing priority uses, they may incur additional costs.

States which use the areas of particular concern (920.13) as the areas in which they designate priority uses will save themselves the time, trouble, and expense of having to establish a wholly separate system of specific geographic areas throughout the coastal zone.

2. Considerations for Determining Priority Uses

The criteria which states may use to determine priority uses can be divided into two sets: areas of particular concern and additional considerations.

Areas of particular concern: These are as may suggest a priority use designation. For example, if a state finds an area of particular concern because of its recreation value, it would logically follow that the priority use of that area would be recreation. Relating the area of particular concern to specific geographic areas assumes that these areas have approximately the same boundaries.

The reason a state might designate a given geographic area as an area of particular concern is based on the inherent suitability or unsuitability of potential or proposed uses. For example, areas of substantial recreational value have recreation designated as a top priority use (inherent suitability); areas that would have significant hazards if developed have residential uses as lowest priority (inherent unsuitability).

The uses associated with an area of particular concern often overlap. When this is so, there may or may not be conflict among uses. As an example of no

conflict, a wetland area may be of particular concern because of waterfowl production, and an overlapping area may be of particular concern because of scenic qualities.

However, if an estuary is an area of particular concern because of its fisheries, and an overlapping area is of particular concern because of its value as a unique source of mineral deposits, there may be a degree of direct conflict.

Where the areas of particular concern overlap and their associated uses conflict, a state must give one use priority over the other. For example, a state could decide to give fishing priority over mineral extraction in the area where the estuary overlaps mineral resource deposit because of the potentially greater economic returns from utilizing a renewable resource on a continuing basis.

For each of the eight types of geographic areas of particular concern presented in the Section 305 regulations (920.13) several high and low priority uses are apparent. Examples are:

. areas of unique, fragile, or vulnerable natural habitat:
  high priority use--scientific, educational, recreation;
  low priority use--intensive public recreation, residential;
. areas of high natural productivity or essential habitat:
  high priority use--fish and wildlife refuges, fishing;
  low priority use--refineries, warehouses, power plants, residences on fill;
. areas of substantial recreational value:
  high priority use--public beaches, resort developments;
  low priority use--pulpmills, steel plants, sand and gravel extraction;
. areas where developments and facilities are dependent upon utilization of, or access to coastal waters:
  high priority use--marinas, ports, fish unloading facilities;
  low priority use--residential housing, shopping centers, small industries;
. areas of unique geologic or topographic significance to industrial or commercial development:
  high priority use--port facilities (direct access to deep water channel and land transportation modes), extraction of oil, sand, and other minerals;
  low priority use--warehouses, residences;
. areas of urban concentrations where uses are highly competitive:
  high priority use--those uses which reduce conflicts;
  low priority use--those uses which maintain or increase conflicts
. areas of significant hazard if developed:
  high priority use--park, agriculture;
  low priority use--residential developments, schools, hospitals; and
. areas needed to protect, maintain, or replenish coastal lands or resources:
  high priority use--agriculture, recreation, scientific and educational reserves, refuges;
  low priority use--solid waste disposal

Additional considerations: Conceivably, states may not use the areas of particular concern at all as criteria for determining priority of uses, but this seems unlikely, given the effort which has been expended and the information developed in determining the areas of concern. It is more likely that the states will as well use additional considerations as criteria.

When one reviews the Congressional history of the Act, both the Act itself and the attendant regulations reveal several specific considerations a state may use to make priority use determinations; we have distinguished fourteen in

the discussion that follows, and states could add others.

These considerations represent realistic approaches to the problems of establishing priorities; approaches that include economic and socioeconomic factors as well as aspects of the physical environment.

Any selection of considerations for priority use determination a state makes will result in a listing of factors which are highly interrelated. For example, in the listing below, states could combile "diversity" with "uniqueness" into one consideration instead of two, or considerations 2 ("control of surrounding land use") and 3 ("impacts of use on surrounding areas") into "relationship to surrounding areas."

States should be aware that some of the following considerations are more easily quantified than others. Measures have been developed for quantifying uniqueness, scarcity, regional benefits, multiple use, prior commitment of land, fair share, and economic efficiency.

However, it is evident that social equity, irreversible commitments, and public preferences are considerations which do not lend themselves to quantification and which require professional judgment and open public review for resolution.

In many cases, considerations will conflict. For example, a large capital investment may have been made in the construction of an industrial facility (prior commitment of land) on a site determined to be unique and worthy of preservation (according to an inventory of unique and scarce resources).

Social equity is another consideration that often conflicts with other factors (e.g., irreversibility, economic efficiency, diversity) as well as areas of particular environmental concern (e.g., areas of high natural productivity, areas of scenic quality).

In the cases where conflicts do occur among considerations, a state will have to make an evaluation and establish procedures for trade-off decisions.

The fourteen considerations are:

(1) Prior commitment of lands: Resources which are presently committed in terms of laws, policies, and public consensus effectively already have a high priority--in fact, possibly the highest of priorities. These include existing strongly-supported special, comprehensive, or master plans which designate areas of special value or use.

As a first step, a state must obviously consider the existing laws when it begins to set priorities. This may result in substantial constraints as the state develops its management program; if so, these constraints will effectively resolve contentious issues.

States accordingly should consider changing legislation if this is necessary to implement up-dated priority use designations. This may mean that the states might wish to evaluate existing programs to determine which they might wish to terminate to achieve new goals.

Prior commitment of lands to a particular use on an area-wide basis may have evolved in several ways. State or local governments may have committed land to uses like recreation or university research areas. Public and private interests may have developed other areas extensively for industrial uses or ports. In still other areas governments may have made considerable capital investments in public services--e.g., water or sewer treatment facilities, highways, schools. Given existing commitments like these, commitments either private or public owners have made, and the benefits that are derived from these uses (employment, recreation days, regional income), it is unlikely that the state will elect to remove these uses; and the existing uses of either high capital investment or high social benefits will remain the priority use.

Other areas may be less precisely defined, but these may represent areas with strongly developed policies expressing broad public concern like conservation of the natural values and amenities of areas like the Big Sur of California, the Everglades of Florida and the San Juan Islands of Washington.

Probably the stronger the public concern covering the particular environmental or social values of the area, the narrower the range of uses which will be acceptable.

Any uses a state proposes for land committed as above must certainly be consistent with the public concern to rate a priority designation. The fact that the lands under consideration are being used as they are in response to public consensus may imply that the present use will remain the highest priority use.

(2) Control of surrounding land use: Any priority use designation of a specific geographic area should consider that activities on surrounding locations may adversely affect the priority use. Designating priority uses should consider whether the use can be maintained over a period of time. Long-term maintenance of priority uses in this specific area depends upon controlling the impacts from uses in surrounding areas.

For example, if an estuarine water body is designated as a specific area for a wildlife preserve, the use of the surrounding area would have to be controlled to ensure that sediment run-off would not degrade the preserve's environmental conditions.

This suggests that many areas with special values may have to have adjoining "buffer" zones to protect them from adverse impacts. The state may choose to expand boundaries of the specific geographic area to include the buffer zone, or may work out organizational arrangements with other agencies to regulate activities within the buffer zone for the purpose of protecting the area with a designated priority use[1,2].

The estuarine sanctuaries regulations recognize this situation:

> Sec. 921.3(b). ...The area chosen as an estuarine sanctuary, shall to the extent feasible, include water and land masses constituting a natural ecologic unit.
> and
> Sec. 921.6(a)(2). The state's coastal zone management program must recognize and be designed to protect the estuarine sanctuary; appropriate land and water use regulations and planning considerations must apply to adjacent lands.

(3) Impacts of use on surrounding areas: Designating a priority use in one area should consider the effects of that use on locations outside of the area. For example, designating a state park may lead to traffic congestion and increased littering outside the park boundaries, thus placing a burden on local public service systems like the police and trash collection. In determining designations for priority uses, states should consider the physical, economic and social capacities of the surrounding areas to absorb these impacts.

Analyzing consequences of impacts outside the specific area if the state does designate a priority use may require altering the priority use or adjusting the uses the state will permit. The Acadia National Park plan was modified to reflect concerns with external impacts[3]. Furthermore, the state's coastal zone management authority may recommend or provide facilities required to absorb the spillover impacts into the adjacent areas. For example, determining an area as low intensity public recreation may generate significant adverse impacts outside the area--trailer parks, campgrounds, picnic areas. But if the state changes

the use designation to high intensity public recreation, the campgrounds, trailer parks, and picnic areas may be accommodated within the park, thus reducing the adverse impacts in the surrounding areas.

(4) Scarcity and uniqueness: A specific geographic area which possesses a unique attribute is likely to have fewer options for alternative uses than areas which have less unusual attributes. For example, coastal wetlands are relatively scarce in California and are therefore highly regarded for scientific and educational purposes, whereas, coastal wetlands in Louisiana are quite common and therefore the loss or degradation of one wetlands system may not be as serious as it would be in California.

Inventorying coastal resource characteristics is a standard method for delineating scarcity and uniqueness (see Section B of this chapter, Permissible Uses).

Specific geographic areas may have value because of their scarcity or uniqueness (see Section C of this chapter, Geographic Areas of Particular Concern). Luna Leopold has constructed a methodology for determining scarcity and uniqueness[4].

The concept of protecting unique characteristics is closely tied to the considerations of irreversibility and diversity. This point may be expanded to include the considerations we discuss in items 5 and 6 concerning diversity of uses and irreversible modifications. Note that if an area is well-known to be unique, it is probably already committed--as are the Everglades, for example.

(5) Diversity: The Act says:

> The coastal zone is rich in a variety of natural, commercial, recreational, industrial, and aesthetic resources of immediate and potential value to the present and future well-being of the Nation. (320(b).)

Both natural systems and cultural systems are characterized by their inherent diversity. The term "pluralism" is often used to describe the phenomenon of cultural diversity (for discussion of pluralism see Chapter V, Public Participation). In the case of natural systems, differences in soils, vegetation, wildlife, and geology are characteristics distributed over a geographic area. Similarly, cultural systems are characterized by differences in race, education, income, religion, and social interests, which are manifested by diverse architectural styles, recreational preferences, and employment opportunities, and a diverse preference for social objectives.

There are several reasons for maintaining the diversity of natural and cultural systems. One of the reasons is to be able to maintain a broad spectrum of future options. Another is that one can better maintain equilibrium of natural and social systems because a system composed of many elements is more resistant to stress than a system composed of few elements[5].

Diversity of natural systems in a coastal zone may also provide a desirable range for optional priority uses. Researchers who studied the Oregon estuaries[6] analyzed them in terms of their estuaries' diversity, with the result that the current objective of the state's estuary program is to maintain that diversity. For example, the state will keep those estuaries that are pristine as they are, and they may well not try to return to pristine conditions those estuaries which have been modified by development.

(6) Irreversible commitments: The Act and the section 305 regulations deal with irreversible commitments of coastal zone resources.

States must evaluate especially carefully uses which irreversibly change the resources, whether through consumption (e.g., sand, oil, gravel) or through landform modification (e.g., filling, dredging, excavation). An approach they

may use would seek to determine if there is another better location or a possibility of substituting for the desired resource (e.g., compacted, burned solid waste residues for paving materials; geothermal steam instead of fossil fuel power plants) thus avoiding impacts that may cause irreversible change. Since irreversible commitments lead to a reduction in future options for resources utilization, this consideration will be especially important in designating priority of uses.

Few of the activities mentioned have impacts which are truly irreversible if cost is not a factor. However, activities which result in the loss of a species certainly lead to commitments which are truly irreversible, regardless of the costs. States must weigh the short-term gains against possible long-term losses. For example, port development may result in an immediate increase in local employment and income, but in the long term, it may result in an overall reduction in the fishery harvest on a region-wide basis.

A marsh may be filled now, and eventually this might lead to extinction of a species which may have considerable scientific, sport or commercial value. A dam may be built now and result immediately in the loss of wild river values. And these lost wild river values may increase in time, as Krutilla discusses: Hell's Canyon provides an example of economic losses from irreversible commitments[7].

The Act emphasizes that now resources are being irreversibly committed, but that we should consider future generations when we allocate resources:

> Important ecological, cultural, historical, and aesthetic values in the coastal zone which are essential to the well-being of all citizens are being irretrievably damaged or lost. (302(e)).
>
> The Congress finds and declares that it is the national policy (a) to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations. (303).

The National Environmental Policy Act (NEPA) specifically requires irreversible commitments to be evaluated in assessing environmental impacts; section 102(c) of NEPA indicates that all federal agencies shall

> include in every recommendation or report or proposals for legislation and other major federal actions significantly affecting the quality of the human environment, a detailed statement on...(IV) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, (V) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

For further discussion of how these concepts have been addressed, see the regulations the Council on Environmental Quality issued on 1 August 1973[8].

The concept of irreversibility should take into account the present versus the future value of coastal resources. For example, the value of wilderness shoreline may be low in terms of present value, but in the future it may be very high because fewer wilderness shorelines may remain and comparatively more people may appreciate the value it represents.

(8) Dependency:

> Examples of some related statewide policies and programs which will affect and should be considered in making determinations under the act include: energy policy, siting of power plants and other major water-dependent facilities,...(920.11; see also 920.13.)

States should ask to what extent does the proposed use need to be located on the coast? How dependent is the proposed use upon coastal resources for its

existence?

With this approach, uses which could be accommodated at a location other than in the coastal zone would have a lower priority than uses which required some feature of the coastal zone to exist. Different studies have recommended the dependency criterion[9,10,11].

States could modify the dependency concept to another approach which would be to compare the costs and benefits of alternative inland locations versus coastal locations. In this case, one of the costs could be the pre-emption of water-dependent uses (see also Sections B and C in this chapter).

States must examine the consequences of relocating a use from the coast to an inland location. This relocation may be called the "displacement effect." Certainly states proposing to relocate a use should determine the environmental and economic impacts of this relocation as a basis for the comparative evaluation of the coastal versus inland impacts.

(9) Economic efficiency: States should ask whether priority use designation will increase the economic efficiency of commercial and industrial enterprises. Will increases in economic efficiency lead to lowered production costs and lower product costs to the consumer? For example, locating power plants inland may increase the costs of electrical power which ultimately may be reflected in higher production costs in industries with large electrical consumption[12].

States may also consider using priority use designation to cluster industrial activities to minimize transportation and communication costs and/or achieve economies of scale (e.g., clustering oil refineries with chemical, plastic or paint industries; locating a fish processing plant with fertilizer and pet food plants; locating power plants with desalination facilities).

Of course, concentrating industrial activities may significantly increase adverse environmental impacts (i.e., water pollution, noise, air pollution). However, where industrial activities are clustered, they may be able to share the high cost of joint facilities for advanced treatment of wastes.

Designating priority uses must also consider the needs for ancillary uses. If the priority use is agriculture, states must consider the same or adjoining areas for agricultural processing, fertilization, warehouses, farm workers' housing, water supply, and other support activities. Another example is the requirement that ports have for support industries (e.g., a ship chandlery, welding facilities, metal supplies and linkage with land transportation systems).

If a coastal use does not have ancillary facilities in close proximity, it may incur substantial transportation and communication costs and therefore may operate at an inefficient economic level.

(10) Social equity: One objective of social equity is to ensure that those who are already socially disadvantaged are not further deprived for the benefit of those who are socially advantaged[13].

States should be sensitive to the fact that benefits from coastal zone resources are in most cases unevenly distributed among socio-economic groups. Therefore, there will be cases in which states should designate coastal areas so that the opportunity to enjoy the benefits from the coastal zone resources are more widely and uniformly shared throughout the state's population. For example, in areas with substantial disadvantaged populations, the state could acquire coastal land and make the coastal resources available at little or no direct cost to the user, including at least partially subsidized camping, picnicking, boat launching and similar coastal-oriented facilities. In another case, the state may encourage private development of coastal lands whose resources are in turn made available at little or no cost to the user, except as he may wish to pay for specific equipment or services associated with the area

(e.g., boats, horses, guides, diving gear) which may be provided as a profit-making enterprise.

This private development might be accomplished through the availability of low interest loans, direct governmental subsidy, or by a purchase and lease-back arrangement.

The California Coastal Zone Conservation Commission considered social equity in a recent decision by which it granted approval of a recreation and vehicle campground project:

> Uses of land in the coastal zone that can benefit many people should have preference over uses that benefit a few. Or more precisely, when a piece of land is not proposed for public acquisition and is thus almost certain to be developed, should it be used for housing--of benefit primarily to the residents of the housing--or should encouragement be given to vacations or similarly temporary uses, such as resorts, hotels, rental units, and recreational vehicle parks, that will allow many more people to enjoy the amenities of the coastal zone.[13]

(11) Regional benefits and national interest: One of the more difficult determinations a state must make in establishing priorities lies in assigning benefits and costs at the national level, the interstate, and the intrastate regional levels. The Act says

> The Congress finds that--(a) there is a national interest in the effective management, beneficial use, protection, and development of the coastal zone. (302).

Section 302(h) also refers to uses of more than local significance:

> The key to more effective protection and use of land and water resources of the coastal zone is to encourage the states to exercise their full authority over the lands and waters in the coastal zone by assisting the states, in cooperation with federal and local governments and other vitally affected interests, in developing land and water use programs for the coastal zone, including unified policies, criteria, standards, methods and processes for dealing with land and water use decisions of more than local significance.

And Section 305 regulations (920.12) in turn point out that

> The management program must provide for adequate consideration of the national interest involved in the siting of facilities necessary to meet requirements which are other than local in nature.

This is partly because in an advanced industrial economy, it is extremely difficult to identify the economic flows and to establish the geographic boundaries of economic systems (i.e., local, substate region, state, and multi-state region[14]).

Regional benefits may be especially important when several states share a common resource (e.g., properties in the Chesapeake Bay or in the Gulf of Mexico). These may include benefits of employment or of production. Another example: an electrical power generating plant located in one small community may provide economic benefits directly to communities over a wide area which supplies workers or services or products to the facility. Recreation facilities--beaches or national seashores--provide beneficial uses to people over extremely wide areas.

Determining regional costs and benefits is made more difficult because states must consider more than economic factors; they must consider, for example, ad-

verse impacts resulting from loss of open space; destruction of wildlife habitat; degradation of aesthetics; and reduction of future options for land use.

In these cases the authority may either reconsider the priority use designation to reduce the net cost to the local community, or it may develop compensatory mechanisms to reduce the net cost to the local community (e.g., land banks, investments of public funds in public projects, revenue sharing, or tax relief)(for further discussion see Section III-A, Means of Exerting Control).

Uses which are in the national interest or which represent national needs generally will have impacts upon local communities similar to those resulting from fulfilling regional needs. However, national needs may imply that federally financed programs may be available to compensate, at least partially, local communities for costs they incur when national needs are filled. For example, the federal government may acquire land for defense purposes and the local community will lose various resources--open space, wetlands. The local community may receive compensation through land exchanges carrying other values.

(12) Accepting a fair share of social responsibilities: Many local governments and states consider a variety of coastal uses undesirable, and they therefore exclude these uses from locating in areas within their jurisdiction. Notable examples are oil refineries, heavy industry, intensive recreation, power plants, oil extraction, solid waste disposal, off-shore oil terminals, low income housing and airports.

Assuming that these uses are expressions of social needs, and at least to some extent, must be located in the coastal zone, then states and local governments which already have accepted their "fair share" of "undesirable" uses should not necessarily be forced to bear the burden of accepting more, while other state or local governments which have less than their fair share should not necessarily continue to exclude "undesirable" uses.

A well-known conflict with the fair share principle is the exclusion of low income housing from suburban communities, a practice which concentrates it in the central city. Numerous court cases have tended to strike down this form of exclusionary zoning, using the fair share concept as one of the arguments[15].

A state may have a legitimate argument for a policy for excluding oil refineries on the basis that it already has disproportionately more refineries than many other coastal states. According to the vice-president of Continental Oil Company, the Governor of Louisiana "recently told other governors that it was unfair for states that will not permit oil-producing or oil-refining activities in their own area to expect other states to give up resources to meet the needs of those laggard states"[16].

In some cases a community may have assumed a disproportionate burden for legitimate reasons, one of which might be the environmental capability of the area. Generally states will have to weigh the fair share criterion against their analyses of comparative impacts and alternative locations.

(13) Public preference: Authorities should be sensitive to public views, particularly in an "anticipatory" sense; the regulations state:

> Public participation is an essential element of development and administration of a coastal zone management program. Through citizen involvement in the development of a management program, public needs and aspirations can be reflected in use decisions for the coastal zone, and public support for the management program can be generated. Participating states, therefore, should seek to obtain extensive public participation in the development and administration of a coastal zone management program. (920.30)

The public is frequently on record at some level concerning its objectives

for use of an area, and the public opinion expressed as a law or regulation. We have already discussed this point under prior commitment.

The public may be presented with alternative priorities of use for a specific geographic area through hearings, surveys and announcements (for further discussion, see Chapter V, Public Participation). By using these approaches, the state should be able to begin to establish which alternative the public prefers.

Public review and selection of priority use appears to be most useful either when the agency cannot distinguish between the relative benefits and costs of alternative uses for a specific geographic area, or when benefits and costs are extremely difficult to appraise by a quantifiable means because they are based on the wide range of social values held by a very diverse set of individuals, groups and organizations within the public (for further discussion of public participation in selection of alternatives, see Chapter V).

(14) Ability to implement a designated priority use: From a practical standpoint, this is a most important consideration. One may ask several questions about a proposed use; for example, does the authority or another unit of government have legal authority to carry out the implementation? If another unit of government has the authority, will it carry out the implementation? Will the priority-use decision be politically acceptable if the priority use requires that the authority purchase land either in fee simple or easement? Are there sufficient monies available for this or are there firm commitments for future acquisition?

If there are needs for development facilities to realize fully a priority use designation (e.g., developing intensive recreation facilities) are there sufficient funds available, or is there a firm commitment for future acquisition? If there are substantial management costs involved in monitoring priority use designation, are there sufficient funds available or committed for the future?

One of the management costs which the authority should avoid are the expenses incurred in preventing degradation of the resources upon which the priority use depends (see consideration 2 above). These concepts of budget, political acceptability and legal means are discussed in the regulations, 920.14 and 920.16, under legal controls and organizational arrangements.

States should recognize that political and economic uncertainties increase with the length of a program's time. Therefore, a priority use designation which requires several years to implement is generally more likely to encounter fiscal and political difficulties--among these, inflation and changes in administration--than one which can be implemented immediately. On this, the regulations say

> Authority is provided in the Act for a State's management program to be developed and adopted in segments so that immediate attention may be devoted to those areas within the coastal zone which most urgently need management programs. (920.44).

3. Methods of Designation

Spatial representation: There are at least two methods of representing specific geographic areas in a spatial configuration: continuous and scattered.

In the continuous concept, every geographic point within the coastal zone is within a specific predetermined area. An example of this is the Texas approach. For an actual map representation, see Figure 1 in Section II-B, Permissible Uses.

The scattered concept will result in priority determination only for discrete areas within the coastal zone. Therefore, locations within the coastal zone may or may not be within specific areas.

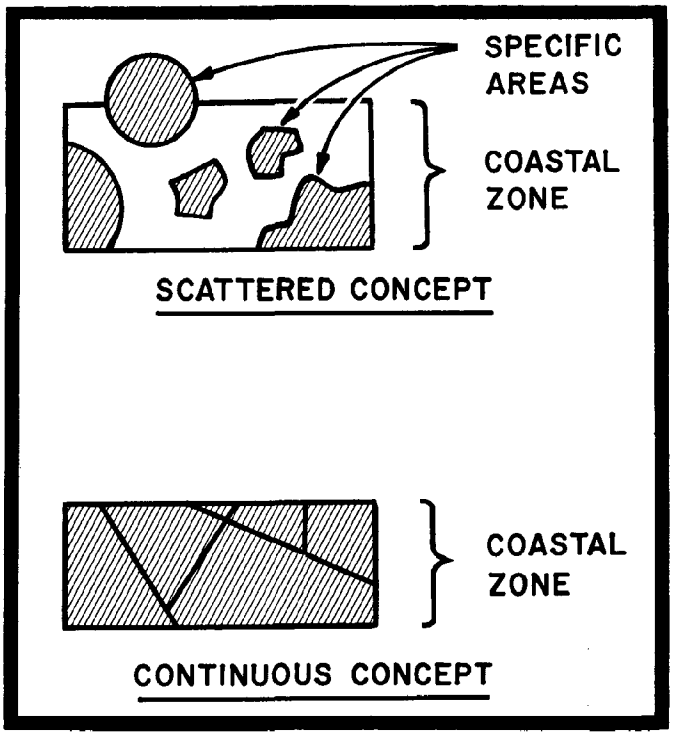


FIGURE 1

The scattered or continuous areas due to their complex nature may overlap.

Areas, either scattered or continuous, may require policies to control land uses outside the area; this may affect the priority use designation. For example, see considerations 2 ("control of surrounding land use") and 3 ("impacts of use on surrounding areas") which look to impacts resulting from uses both inside and outside the areas in question. Benefits and costs are associated with each concept; the states must determine for themselves which to use when.

An advantage of the scattered area concept is that it can be applied to areas of considerable heterogeneity--planning in relatively modest increments.

On the other hand, states may find that the continuous area concept is particularly useful where there is some homogeneity--environmental, institutional, or social. Using the continuous area concept, however, may involve considerable costs for information collecting and monitoring as well as for administrating.

Graphic representation of relationships with use-specific areas: There are two ways to designate specific areas. One is by recurring type (e.g., wetlands, dunes, terraces, estuaries, coastal plains); the other is by place name areas (e.g., San Francisco Bay, Humboldt Bay, Penobscot Bay, Assateague Island). A graphic representation is shown in Figure 2 below which uses simple matrices of the relationship which given uses may have to specific geographic areas.

If a state uses this approach, it must map the areas to indicate their specific location. (See Figure 2 in Section B of this chapter--prepared by the Texas Bureau of Economic Geology.) Figure 3 which appears below also uses a simple matrix concept, but in line with the place name area concept outlined above.

Types of Geographic Areas (recurring)	Use: Refinery	Marina	Residential	Fishing
Estuary	U	I	U	D
Beach	U	O	U	D
Coastal terrace	O	O	O	X

D desirable
U undesirable
I intermediate
X inconsequential
O indeterminate (needs specific on-site information)

FIGURE 2

Place, Name, Areas	Refinery	Residential	Fishing	Education
San Franciso Bay	M	M	H	M
Napa River salt marsh	L	L	H	M
Bodega Marine Life Refuge	L	L	M	H

H high value
M medium value
L low value

FIGURE 3

States may find other rating systems more useful; this will depend on how much detail they desire, as well as the amount and quality of information available with which to make judgment.

Another rating system might be number values, where 1 is the highest value, and 5 the lowest value, with 2, 3, and 4 representing intermediate values. But unless the state has highly detailed and accurate quantified data available, using numbers to indicate rank does not necessarily imply a proportional relationship (e.g., "4" is not necessarily twice as "bad" as "2").

Matrices of these types actually may represent a net benefit-cost summary based on the evaluation of impacts that result from activities associated with each proposed use. For a fuller discussion of the matrix technique and problems of assigning values to impacts, see Section B of this chapter.

Definition of uses: The more specifically the state wishes to have uses defined, the higher the information collection and administrative costs will be to the authority. For example, specifying different uses--surfing, swimming, waterskiing, sport fishing--as uses for an area will require higher staff and plan preparation costs than simply designating "recreation" as a use for an area.

In cases where the sensitivity of the area to adverse modification is either high or of immediate concern, then these costs may be justified. For example, in the case of an estuary, sport fishing may be determined to be a compatible use, whereas waterskiing may be incompatible--distinctions which may have been overlooked under a general heading of "recreation" as a use.

A number of states have grouped uses into categories for priority designation purposes. Washington, for example, in the guidelines to its shoreline act states:

> The recommended system classifies shorelines into four distinct environments (natural, conservancy, rural and urban) which provide the framework for implementing shoreline policies and regulatory measures.[17]

Florida has described a similar classification:

> The Coastal Coordination Council approach utilizes three major categories or zones of land and water use. These categories--preservation (no further modifications), conservation (controlled modification), and development (few if any state-level controls)--are designated after consideration of the following eight factors.
> 1. Soils suitability of the area.
> 2. Ecological significance of the area.
> 3. Susceptibility of the area to flooding, both from runoff and and hurricane driven tides.
> 4. Historical and archeological significance of the area.
> 5. Unique features that may warrant protection.
> 6. Water quality standards.
> 7. Present land use.
> 8. Geological factors to the extent possible with existing information.[18]

4. Revision Over Time

States may designate priority uses over a period of time so that they may give some areas which are immediately threatened prompt designation, and delay priority designations on those with no visible threats. They may also use moratoria to delay designation of priorities until they can conduct research and information collection programs.

As goals and objectives change, priorities will change. The states must constantly keep information concerning uses and their impacts up-dated and stored and then be able to retrieve it when they need it. It will be very important to provide a feed-back into the information system, including a measure of the impacts occurring from earlier priority project implementations. All such projects should be designed to provide for a periodic review and evaluation.

The exact method of review, evaluation and actual change in priorities will depend upon the management system the states choose. However, the basic principle of selection of objectives for the coastal zone based on the wishes of the people will always apply. The authority's constant review of the consequences of actions it and other agencies have already taken could provide a better understanding of the value of new proposals. The states must always be prepared to heed public preferences, whether or not they act on these preferences all the time. As population increases or as popular activities change, so will the demand for specific uses within the coastal zone.

CITATIONS

1. Albert Veri et al., "The Resource Buffer Plan: A Conceptual Land Use Study, Study #2," Rockery Bay Land Use Studies: Environmental Planning Strategies for the Development of a Mangrove Shoreline, Conservation Foundation, Washington, D.C., October 1973.

2. Conservation Foundation, An Environmental Management Program for Bolinas

Lagoon, California, February 1971

3. U.S. National Park Service and the Maine State Office of Planning, Coastal Planning Group, Acadia National Park: Revised Master Plan, expected publication date: Summer 1974.

4. Luna Leopold, "Quantitative Comparison of Some Aesthetic Factors Among Rivers," U.S. Geological Survey Circulars, No. 620, Washington, D.C.

5. U.S. Water Resources Council, Summary Analysis of Public Response to the Proposed Principles and Standards for Planning Water and Related Land Resources and Draft Environmental Statement, July 1972.

6. David A. Bella, and Peter C. Klingeman, General Planning Methodology for Oregon's Estuarine Natural Resources, Oregon State University, Corvallis, March 1973.

7. John Krutilla, and Charles J. Cicchetti, "Evaluating Benefits of Environmental Resources with Special Application to the Hells Canyon," Natural Resources Journal, 12(1):1--29, January 1972.

8. U.S. Council on Environmental Quality, Preparation of Environmental Impact Statements: Regulations, Federal Register, 38(147):20550--20562, August 1, 1973.

9. California Resources Agency, California Department of Navigation and Ocean Development, Comprehensive Ocean Area Plan, Sacramento, 1972.

10. Michigan Department of Natural Resources, A Plan for Michigan Shorelands, Lansing, August 1973.

11. San Francisco Bay Conservation and Development Commission, San Francisco Bay Plan, 1968.

12. Gruen, Gruen & Associates and Sedway/Cooke, Approaches Toward a Land Use Allocation System for California's Coastal Zone, prepared for Comprehensive Ocean Area Plan, Appendix II, California Department of Navigation and Ocean Development, October 22, 1971.

13. Thomas Dickert, and Jens Sorensen, "Social Equity in Coastal Zone Planning", Coastal Zone Management Journal, 1(2), Winter 1974.

14. Allen Fred, "Behavior and Location: Foundations for Geographic and Dynamic Location Theory", Part I, Land Studies in Geography, Series B Human Geography, No. 27, Lund, 1967.

15. Lawrence G. Sager, "Exclusionary Zoning: Constitutional Limitation on the Power of Municipalities to Restrict the Use of Land", Land Use Control Annual, 1972.

16. Ray Endarie, "The Case for Drilling off the Atlantic Coast", Our Sun, Corporate Public Relations Department of Sun Oil Company, St. Davids, Pennsylvania, Winter 1974.

17. State of Washington, Department of Ecology, Final Guidelines Shoreline Management Act of 1971, June 20, 1972.

18. State of Florida, Department of Natural Resources, Coastal Coordinating Council, Recommendations for Development Activities in Florida's Coastal Zone, April 1973.

CHAPTER III

AUTHORITY AND ORGANIZATION

A. Means of Exerting Control

> In the Coastal Zone Management Act of 1972, Congress found that the key to more efficient protection and use of the land and water resources of the coastal zone is to encourage the states to exercise their full authority over the lands and waters in the coastal zone by assisting the states in cooperation with Federal and local governments and other vitally affected interests, in developing land and water use programs for the coastal zone, including unified policies, criteria, standards, methods, and processes for dealing with land and water use decisions of more than local significance. (Section 302(h).)

The Act is therefore structured to achieve a state-level program that has sufficient legal authority to implement a coastal management program. To develop a plan that does not have implementing authority is not sufficient. Under the Act, the states' objective is to implement laws, procedures, and enforcement mechanisms to improve the manner in which decisions about coastal management are made.

Congress provided two sets of guidelines for states to follow in meeting this objective: The first provides three alternative general techniques for controlling land and water uses; the second provides a list of basic powers necessary for implementing the management program. We will discuss the alternative general techniques and the list of basic powers in detail in this section. Discussion in this section refers primarily to Sections 305(b) (4), 306(c) (7), 306(d), and 306(e) of the Act and Section 920.14 of the Section 305 regulations.

1. Process of Analysis

States will have to consider a variety of issues as they begin to bring their existing resources management laws in line with the Act's requirements. They will need processes for evaluating laws and for determining permissible uses, areas of particular concern, and guidelines on priorities of uses within particular areas. They should consider these questions:

- Are current state laws sufficient for coastal management under the Act?
- Which state agency or group of agencies should have authority to implement and to administer the program?
- Do existing state laws consider adequately private property interests--the "taking issue"?
- Should the state's coastal management program be regulatory (reactive)? Should it encourage specific uses or projects (promotional)? Should it have elements of both?
- At what time during the program development effort should the state enact or modify pertinent laws? Are interim controls either desirable or necessary?
- From what sources can the state finance the development and implementation of its coastal zone management program?

Are current laws within the state sufficient for coastal management under the Act? Section 305 regulations require that the states address two issues (920.14(b):

- are existing state powers and authority sufficient to exert one of three alternatives means of control specified in Section 306(e) of the Act; and
- what specific modifications or strengthened mandates would be necessary to qualify the state for management program approval under Section 306(d) and 306(e).

The Section 305 regulations require the states to perform a study of their laws as part of the developing of their management programs. The study consists of a "listing" of laws and an "assessment" of those laws to determine the need for legislation to establish a comprehensive and effective management program. The assessment must consider current legal constraints or prohibitions, necessary executive or legislative initiatives, and, where required, preparation of the elements of any legislative program needed to establish a comprehensive and effective management program (920.14(b)).

Below is a suggested list of legal materials relevant to coastal resources management that a state should collect:

- state constitutional provisions;
- statutory provisions (e.g., general laws, special laws, appropriation measures, resolutions);
- legislative grants of general power to agencies or political subdivisions (e.g., home rule charters, agency organic laws);
- rules and regulations of agencies granted power from the legislature;
- ordinances, plans, resolutions, budgets, and other instruments of the state's political subdivisions;
- the findings of applicable court cases at the state and federal levels;
- other agreements, practices, and memoranda that delineate decision-makers' authorities and responsibilities regarding coastal resources; and
- interstate or substate regional agreements or understandings.

Initially, a state should interpret this listing broadly rather than narrowly. Those powers which result in withholding or granting of funds, review of agency action, and required coordination or interaction among agencies critical to the listing.

A state's assessment of a law's sufficiency to implement a coastal management program is a matter of legal interpretation. For this reason the attorney general, the county, or the agency attorneys should participate in the assessment.

This raises the question of whether a "study" of laws is necessary. States may reason that if their attorneys general say that the law is sufficient, this should satisfy federal requirements. However, specific statements in the regulations and in statute say that a state should prepare a "listing" and an assessment of its laws, presumably with evidence of a detailed study or analysis. States may wish to consider using both a study and the comments of their attorneys general in developing their coastal management programs.

The content of the study should follow traditional techniques of legal analysis, noting how courts and administrators have interpreted analogous legal provisions in the past as a measure of how an existing or proposed law might operate in the future. To expand this analysis, a state should consider operational or behavioral studies as a technique to measure a law's effectiveness. Surveys or interviews with coastal users and regulators could reveal how current administrative programs are working day-to-day, as well as reveal major strengths and weaknesses of regulatory programs. A combined legal and operational assessment would provide a sounder base from which a state could develop new laws or modify existing ones.

States should remember certain special considerations when they assess current laws. A judicial precedent by itself may not be sufficient "law" to establish a coastal zone management program. For example, in California, the state's courts recognizing a public trust doctrine (Marks v. Whitney)[1], unless it were specifically implemented by statute, might be insufficient to develop a coastal zone management program. The power necessary to make administrative decisions would not rest in a "manager".

Courts also do not give as much weight to executive orders as they do to statutes, for executive orders tend to be less permanent than Acts of the legislature, which suggests they may not have the same degree of "standing" for coastal zone management purposes.

Rules and regulations of state and local agencies can be hard to locate and identify. Few states, for example, have an equivalent of the "Federal Register," and state agencies rarely have uniform procedures. Local governments, especially those in rural areas, frequently have no established procedures. Their practices are not codified and it would be difficult to point to specific legal materials outlining rights and responsibilities. Where such documents do not exist, states may wish to consider "certification" from the appropriate official that he exercises his authority under certain procedures. With this listing of laws, states may consider publishing a directory of the laws and regulations that relate to their coastal resources management for benefit of users and government officials at all levels within their states. Michigan, for example, is preparing a directory of laws, regulations, and agencies which affect development in the coastal zone.[2] Massachusetts has a directory of environment and resource agency responsibilities that includes laws, regulations, and administrators' names and phone numbers.[3]

Below are examples of studies various states have done on the adequacy of state laws for coastal zone management. None were performed specifically for the purpose of meeting the federal Act's requirements and the implementing regulations. We describe these particular studies because they represent several approaches to the coastal zone management legal issues:

In South Carolina, Leavell did a study on "Legal Aspect of Ownership and Use of Estuarine Areas in Georgia and South Caroline".[4] It is a thorough analysis of legal doctrines applicable to managing areas of waters and land along the coasts of Georgia and South Carolina.

In Maine, Halperin compiled a five-volume study, "Maine Law Affecting Marine Resources".[5] Among the subjects this study discusses are federal limitations on state control; land and water uses; public and private rights and powers; and state agencies dealing with marine resources.

In North Carolina, a legal task force (state agency attorneys and university law professors) under the Attorney General is studying legal approaches to coastal zone management. The task force gives continuing advice to the Governor, the legislature, and key state officials on proposed draft bills for coastal zone management. Further, the University of North Carolina Law School produced a special law review issue on coastal law.[6]

In California, the Comprehensive Ocean Area Plan (COAP) produced a short analysis of selected legal issues that affect coastal and marine resources management in the "Supplement" to the COAP. The Supplement discusses an agency analysis, legal considerations in regulating land use, controlling subdivisions and access to the coastline, and taxation problems relating to coastal development.[7]

In Texas, the Coastal Resources Management Program recommended, as part of its initial work to establish a state coastal zone management program, amending key state laws which they felt were inadequate. Their legal studies related to the sale of submerged land to navigation districts (a practice which the legislature has now reversed) and legislative reform in the use of barrier islands. These special purpose studies were designed to meet specific problems recognized to be of priority in Texas.[8] A more recent review of Texas legislation on coastal and marine resources is available.[9]

Which agency, or group of agencies, should a state give the authority to implement and to administer the program? The agency (or agencies) chosen to

implement a management program must have authority to administer land and water use regulations.

The authority, or power, to administer land and water use regulations must exist collectively in all of the state agencies a state chooses. Any agency or group of agencies in a state, the combination of which will comply with the federal law, is sufficient. The state must have a management program which coordinates these agencies. Or a state could choose to put all necessary authority in one agency. although all of the authority does not have to be in one agency. As California, the state could distribute authority in regional commissions as well as placing it in a state commission.[10]

The need for a legal survey and assessment, and the need to choose an agency or group of agencies with sufficient authority to implement the coastal management program, suggests that wherever possible states should use personnel of agencies which will be administering the law to assist in the legal survey. Using agency attorneys, staff lawyers of states' Attorneys General, state-supported legal research institutes at universities or state legislatures would help ensure that a state was developing sufficient capability (920.43) (see III-B, The Organizational Structure to Implement) to administer effectively the coastal zone management program it was developing. Ensuring that legal authority is adequate and doing the job is a continuous process of planning, revision, and evaluation. The legal component of the management program is a major aspect of coastal management; states should develop an effective in-house capability to do so from the beginning.

Has the state considered sufficiently "the taking issue"? Because uses of natural resources are their primary concerns, coastal management programs will affect people's property interests. Pr-perty interests will include the accesses to and uses of land and of other natural resources. The United States Constitution protects private property interests by precluding the government's taking private property without just compensation. However, the United States and state constitutions require government to protect the general welfare of the citizens by exercising police power. The law has always recognized the right of government to curb the exercixe of property interests where this is necessary to protect citizens' health and well-being. But today, more frequently than in the past citizens are asking whether governmental restrictions on uses of private property in particular cases constitute "taking" the property; if it is, the government must pay the owner(s) compensation.

To be effective, coastal management programs will require regulating private property interests to some extent. But neither states nor the federal government has enough money to pay compensation for all, or even a portion, of the property states should manage under coastal management programs. Thus, states will have to address several questions to determine whether the programs they consider adopting involve "taking" issues in any way. A recent book, The Taking Issue[11], outlines in detail the legal and policy aspects of the subject.

The Section 305 regulations encourage states to innovate as they develop legal techniques for implementing a coastal zone management program. Working out new techniques for avoiding pitfalls of the taking issue would be an example of innovation. Section 920.14(b) on exerting state control over land and water uses also encourages states to consider innovative techniques or strategies that planners are now testing and using in the United States and elsewhere that the states think would be useful in their new management programs.

Legal innovations have already occurred in many states. The one most frequently discussed involves government's purchasing a partial interest in land. The interest the government purchases is normally that which the state wishes to control for a public purpose. For example, a state might purchase land, but

allow the present owners to enjoy the use of the land during their lifetimes. After they die, the land would revert to the state. States could also purchase a scenic easement or a development interest to maintain particular scenic amenities, forestall or encourage certain development options. Frequently these purchases of a partial interest in land are coupled with a tax reduction so that the state taxes the value of the land for its current use rather than for its potential use when the land is fully developed.[12] The Nature Conservancy, a conservation organization whose objective is to save key parcels of land around the country for those lands' natural and recreational values, has become expert at the use of innovative legal techniques for accommodating private, local, national, and conservation interests.

There have been other legal innovations. In the Maryland wetlands statute[13] the legislature provided that an individual who believes his privately-owned wetlands were so regulated as to constitute a "taking" of the land can appeal to the courts for judicial determination of that issue. New York[14], New Jersey[15], and Florida[16] have passed special bond issues to purchase wetlands and unique environmental areas. New York state and local governments shared the costs of administrating and managing wetlands and other unique areas. In Louisiana the legislature required the Louisiana Superport Authority to develop an "environmental protection plan"[19] concurrent with the Superport development project. The environmental protection plan includes limited land use and development controls and, in effect, is a coastal zone management plan for a region of the coast. Michigan is considering a scheme under which landowners will sell land to the state and the state will sell it back to the private owner with a conservation easement and a reassessment of the property taxes.

Many others are also discussing innovative techniques for land use controls. Sorensen discusses four different techniques for achieving equity amont property owners when government regulations substantially alter the free market system in determining future uses of land.[18] These techniques are designed to offset the "windfall and wipe-out" phenomenon. Property owner A would get a windfall if the state permits his property to be developed fully, while property owner B might be wiped out financially if his state's coastal management program required that his property be left substantially undisturbed.

> Perhaps the most direct approach is to tax the windfall property owners on the value added to their property by the land use designation. The value added tax could be applied two ways: tax only, or tax and compensation. Lands allowed to develop could be taxed so as to reduce their value to the value of lands with development restriction. Lands with value added could be taxed and the revenues derived from the tax distributed among owners of development restricted property as partial compensation for profits lost by land use designations. A tax only approach appears to be far easier to administer than a tax and compensation system.
>
> A second means of achieving equity among property owners is by compensable regulations. Compensable regulations would require the passage of state enabling legislation authorizing the coastal management agency to impose compensable regulations on all private land designated by the coastal plan to be held in open space uses. Following the adoption of such regulations, a special appraisal would determine the market value of lands prior to and unaffected by the imposition of the coastal land use designations. This value would constitute the property owner's guarantee. Upon sale on the open market of any land subject to compensable regulations, if the price fell below the owner's guarantee, the coastal manage-

ment agency would pay the seller the difference between the guarantee and the price received.

A third means of distribution would be the establishment of density transfer zones along the coast. The zone boundaries would be based on similarity of environmental and socioeconomic conditions or political jurisdiction limits. Within each zone all property owners would be given approximately the same development density (such as one dwelling unit per acre). If one property owner desires a higher density (such as four dwelling units per acre), he must purchase the additional density from other property owners within the zone. The land owner who sells the density rights receives a proportional reduction in the maximum density permissible on his land (such as a reduction to one dwelling unit per four acres). This approach appears most applicable to the preservation of landmarks and residential development of rural areas. . .

The creation of a coastal land bank presents a fourth means to achieve equity among coastal property owners. The coastal zone management agency (or an institution working in conjunction with the coastal zone management agency) through controlling the supply of coastal land, would control the rate, density, and direction of development. Land banking would involve both outright (fee simple) purchase of land and the purchase of easements. The property acquired by the land bank could be sold or leased to investors who would then use the land in a manner consistent with the priority use designations of the coastal plan. The revenues derived from sale or lease of lands could be used to acquire additional property. The English have used the land bank concept to acquire and manage greenbelt lands around London. . . . A regional land bank was one component of a Bay Area Conservation and Development Agency proposed by A3 1057 (Knox) during the 1971 session of the California Legislature.

Should a state's coastal management program be regulatory (reactive) or should it designate specific uses or projects (promotional)? A state could develop a legally sufficient coastal management program that would regulate specific land and water uses based on performance standards applicable throughout the coastal zone. The assumption of this approach is that options for particular uses of the coastal zone lie with landowners so long as their use activities conform to specific rules and standards. A shorefront property owner could build on his land if he met certain standards, among these run-off and siltation, handling of waste waters to minimize pollution, structural requirements to ensure health and safety, and intrinsic suitability to accommodate the proposed use. Whether he built a home, a golf course, or a supermarket would not be the coastal management agency's concern (although other local government units might restrict types of development if zoning laws existed).

Another legally sufficient approach for a coastal management program would involve designating specific sites for specific uses in the coastal zone. This approach suggests that government, through a coastal management program, should establish a plan for use of the coastal zone and that the coastal management agency should encourage, through a review procedure of project proposals, only those uses the plan would permit. Many municipal plans use this approach.

However, even when a plan exists, individual projects or uses which affect that plan need authorization to proceed. (Under some city plans, a proposed use needs Planning Commission approval before it is allowed--regardless of

whether it is a conforming or non-conforming use). This suggests that coastal management will probably involve aspects of the regulatory approach involving performance standards and aspects of the plan approach under which uses are designated in areas of particular concern.

The Lake Tahoe Regional Planning Agency (TRPA) combines both procedures nicely. Land use designations are delineated in a comprehensive plan the TRPA has established for the entire drainage basin of Lake Tahoe. In addition, the plan establishes a separate series of environmental capability units for the Lake Tahoe drainage basin. The land use designations and the environmental capability units are overlaid to determine the criteria to be met in a given area. For example, environmental capability with respect to grading and impervious surfacing to control sediment runoff into the lake which coincides with an area designated for single-home dwellings, would result in certain conditions required for home construction. And within each use designation zone there are specific performance standards for the activities which may occur in that zone. A zone which allows residential development also contains specific performance standards to control sediment runoff into the lake. Under this plan, development is permitted, but degradation of the quality of Lake Tahoe is minimized [19].

For many reasons, states may wish to structure coastal zone management programs to encourage certain kinds of uses. For example, coastal zone renewable fishery resources which are underutilized could be utilized without altering natural features, thus increasing economic benefits without long-term losses. Public recreational development in underused portions of the coastal zone for the benefit of inner-city residents could help alleviate a serious social problem. And serious coastal erosion in some regions suggests that coastal management plans address how and where structures might be built or how other steps might be taken to alleviate the condition. Some have suggested that land-building--coastal zone extension--might be feasible in high density areas, for example, off the shores of ocean islands like Hawaii or off the shores of major cities like Chicago.[20]

These ideas imply that a state could structure its coastal management program to foster these project-oriented programs. The coastal management agency could itself sponsor the projects. This would require that the state's law contain provisions that allowed it to enter into construction projects, acquire or condemn property, issue bonds, or tax property owners if this were necessary to carry out a project. But this might also put the agency in a conflict of interest position where it would be responsible for ensuring that performance standards are met in a project it is sponsoring. This potential conflict, where one agency regulates the same industry it promotes, has recently received much adverse public attention. The Atomic Energy Commission is one example.

But the coastal management agency need not be a project sponsor. It could suggest the need for a project to another agency (the state fisheries agency, the state recreation department and the state public works department for the examples above) and help secure funds and approval. When the state considers major water resource projects or major recreational developments, it should also consider close coordination with relevant federal agencies.

States have wide range for innovation in projects which could maximize use of coastal resources, encourage multiple uses, or restore coastal zone environments. Both North Carolina and Georgia have experiments in planting spartina and dune grasses to encourage revegetation for increased wildlife habitat and soil erosion control. Californians are experimenting in adapting marina designs to a tidal marsh environment. In the Gulf of Mexico and off California oil companies are developing totally submersible bottom completion

oil wells. The oil companies are also discussing with the states ideas regarding multiple use of retired oil and gas platforms in the Gulf. Engineers are suggesting power plant cooling systems which extend far offshore to avoid thermal effluents in estuaries. In Louisiana others are studying tertiary treatment of sewage on marshes.

All of these possibilities suggest that coastal management programs could go far beyond regulating competing coastal uses. In many cases, states will solve problems only through projects that will in some ways alter the coastal areas.

At what time during the program development process should a state enact or amend legislation? Are interim controls desirable? It is difficult to predict when a state legislature or governor will act to implement the state's coastal zone management program. Before the Office of Coastal Zone Management approves a management program, however, the state must adopt the program, including the organization and authority to implement it. The state must consider when and how this adoption occurs as part of the process for developing its management program.

Two viewpoints on this problem make the dilemma clear. One state legislator argues that he'd rather wait to see the final coastal management program before the state gives it any real authority--for example, the authority to control land uses. The energetic coastal planner, on the other hand, argues that strong interim controls are imperative to test ideas under consideration for the management program and to prevent developers rushing to get their projects in before the state's permit system starts. Analysis of these polar views suggests three possible alternatives: first, using interim permit controls; second, creating a legislative framework into which the state can insert its management program; and third, postponing the effective date of the state's law or portion of that law.

Using interim permit controls provides a check and review over development projects while a state is designing its comprehensive plan. California uses this approach in its Coastal Zone Conservation Act. The Act creates a special permit zone in which all uses of the coastal zone require a permit. The Commission is developing a comprehensive coastal zone management plan which will go to the legislature in 1976. The interim permit controls operate only until the legislature acts on the plan. Supporters of the interim permit controls argue that these controls prevent irreversible commitment of coastal resources that might be contrary to the plan the state ultimately adopts.

Another argument is that planners need interim controls to test planning strategies and controls and to provide a learning laboratory for identifying key issues, assessing political considerations, and becoming sensitive to equity considerations. In California, in addition to permit review, Commissioners must also develop and approve a plan. Peter M. Douglas comments on the fast learning process imposed on lay commissioners who one day discuss elements of a proposed coastal management plan and the next day hear arguments from lawyers over a hotly contested permit request.[21] Perhaps the strongest argument for interim permit controls is that no such thing as a final plan exists, that planning is a continuous process, and that planners and managers must work together continually in coastal zone management. Using this argument planners find no valid basis for postponing implementing a permit system.

Interim permit controls serve another very useful purpose: If developers learn that planners are preparing a land use plan which designates specific uses in specific coastal areas, quite logically they will rush to begin their projects before the state begins to implement its management program. This can effectively undermine the planning program's purposes and encourage

speculation in land. It may also spur reckless development schemes which, without the impending land use controls, developers would approach more cautiously. An unexpected boom in development pressure in an area where the state is developing a comprehensive planning program makes the planning process that much more difficult since patterns of predictable demand and land usage are distorted by the pressures toward development before the plan becomes effective.

Interim permit controls can overwhelm the planning unit, forcing it to spend all its time on the permit load and none on planning. The permit system should provide ways in which minor permits can be separated from the major ones. Analyzing size, location, and degree of controversy surrounding a project should enable the agency to develop a threshold point on a scale by which they judge all their permit requests. Those above the threshold would receive closer attention and analysis than those below. A state might also consider separating the planning and permit functions.

Moratorium is another interim control mechanism. The federal government declared a moratorium on outer continental shelf oil drilling in the Santa Barbara Channel from 1969 to 1973. The Texas State Land Office enforced a moratorium on the sale of submerged lands from 1970 to 1972. Many environmental groups throughout the nation have suggested moratoria as a technique to control development. In almost all cases, moratoria are used as devices to halt development until government agencies can put forth plans or rational approaches. The Texas moratorium was limited to the end of 1972; at that time the state planners presented a comprehensive resources management program to the state legislature. If a state uses them judiciously, moratoria can be a valuable tool for a state which has a particularly pressing problem that needs solution.

Building a framework for an approved coastal zone management program is a second approach a state could use in its initial planning stages. For example, a state could create an agency, or an interagency group, or designate an existing office or offices which would be responsible for implementing the coastal zone management program. That agency would have jurisdiction over land and water uses in the coastal zone. The agency would also have authority to promulgate rules and regulations. The coastal management program would be implemented by a rule or regulation of the agency, by an executive order of the Governor, or similar administrative action. Before it implemented the coastal zone management program, the agency could exercise its jurisdiction by an interim permit control or selective control over key issues which the legislature had determined. If it were necessary, the state could suspend or postpone the agency's jurisdiction until the state had progressed in developing the coastal zone management program. In this situation, the agency could work with other state or local agencies if issues were to arise that directly affect the state's proposed coastal zone management program. Although this approach would leave the question of interim controls unclear, the agency would exist and could begin to build a constituency for coastal zone management.

Postponing the effective date of the state's law or a portion of that law (e.g., until the state has completed its program development effort or has completed some critical study element) is a third approach a state could consider. If the state has enacted legislation, this is clear notice that it is developing a coastal zone management program. And in a state which is approaching coastal zone management very cautiously, this approach may be a way to commit the state's budget and planning efforts to developing the program while a constituency is developed for it. In many cases building slowly toward coastal zone management helps assure management will ultimately be implemented by avoiding confrontations and opposition early in the process.

How may a state finance the development and implementation of its coastal zone management program? A state which takes full advantage of the federal coastal zone management program could expect, assuming full funding at the federal level, an average of $400,000 per year for planning (combining state and federal shares) and an average of $1,000,000 per year for management (again, combining state and federal shares). These estimates assume that the state is making adequate progress toward an approvable coastal zone management program; that Congress appropriates and Office of Management and Budget releases coastal zone management funds; that Congress does not alter the current levels of authorized spending; as well as many other factors. These sums may or may not be sufficient for a well-developed coastal management program. States that have extensive shorelines, wide coastal zones, or significant conflicts among coastal users, will probably need additional resources to make their programs successful. During the planning phase, these states could seek further assistance in coastal zone management development from agencies with related programs--for example, HUD 701 USGS Land Use Mapping Program, USDA Soils and Land Use Maps, and the National Sea Grant Program. Numerous projects in these programs are providing services to states which could help a state develop its coastal zone management program.

Once a state implements a coastal zone management program and sets up a regulatory system, it could fund a management agency by assessing fees on those who apply to that agency for permits. These fees could cover cost of permit applications and related processing costs. But fees could raise an equity question; a state should be careful not to burden small property owners unfairly in terms of relatively minor fees large corporate owners would have to pay. Dedicated revenues are another method a state might use. For example, it could tax or assess dredging in a coastal area in amounts that would depend on the amount of acreage the developer planned to dredge; these monies could go into a special fund to finance the coastal zone management program. But there are drawbacks to this method. An agency whose funds depend on granting dredging permits may be reluctant not to grant these permits. And with dedicated revenues there might also be insufficient legislative overview of the coastal zone management program. Public administrators have criticized using dedicated revenues recently.

Local governments could be another source of revenues for coastal zone management programs if these governments are actively involved in the state's planning and management process. Some states have considered giving development and management grants to local governments on a matching fund basis to get them involved in coastal zone management. This means additional sources of revenue for the state program as well as additional people working on the development and management process.

2. Relationships of State and Local Governments

After a state has analyzed factors involved in developing the authority and controls portion of a coastal management program, it should also review the language of the Act. In addressing the overall structure of a coastal management program, the Act provides

> (1) for any one or a combination of the following general techniques for control of land and water uses within the coastal zone;
>
> (A) State establishment of criteria and standards for local implementation, subject to administrative review and enforcement of compliance;

(B) Direct state land and water use planning and regulation; or

(C) State administrative review for consistency with the management program of all development plans, projects, or land and water use regulations, including exceptions and variances thereto, proposed by any state or local authority or private developer, with power to approve or disapprove after public notice and an opportunity for hearings. (Section 306(e).)

As it addresses the question of developing a means by which to control a coastal zone management program, a state must consider the relationship between state level agencies and substate units (local governments, regional governments, special districts). A state need not share its authority with local or regional governments, nor need it coordinate all its coastal management program with subunits of state government. A state, with its citizens' consent, could develop a state level management program to which all substate units would be subservient. The state should recognize, however, that political realities and realities of administering a comprehensive program require using fully the resources of local and regional units of government. The Section 305 regulations specify that one issue a state must address is "whether a shared state-local or state-areawide regional consolidated regulatory system should be established." (920.14(b)(3).)

In analyzing its relationship with local governmental units, a state should consider two approaches: "shared" and "consolidated." In a shared program, state and substate units have authority to handle specific aspects of the coastal zone management program. They would have this authority through laws and administrative procedures that the state built into its coastal zone management system. For example, in Maine, under the Shoreland Zoning Act, the state is responsible for developing the guidelines for shoreland zoning; the local governmental units are responsible for implementing a zoning ordinance. Each has responsibilities within the coastal management system.

The second approach to relationships between the state and substate units is a "consolidated" relationship. For example, a group of agencies, each of which has different responsibilities for coastal resource uses, could be grouped together under an executive order or statute. This would require coordination among the agencies, assign various responsibilities to them, ensure no duplication or cross purposes exists, and set forth the interrelationships of the controls both the state and substate units would exercise. "Consolidation" of efforts is necessary to achieve the coordination and interrelationship the statute or executive order requires.

Typical mechanisms this interrelationship might use include a veto power in the state government if local government fails to comply in some part of the program; other review authority in state government over initial local government decisions; and local actions which are subject to strict guidelines from state agencies. For example, under the California Coastal Zone Conservation Act, regional commissions make initial decisions regarding uses of the coastal zone, but these decisions can be appealed to the state Coastal Zone Conservation Commission. In California, then, the system is consolidated because a clear interrelationship exists between substate and state level actions.

A state must have one of, or a combination of three, general approaches for controlling land and water uses in the coastal zone before the Secretary of Commerce will approve its program. And whatever approach the state selects, agency or agencies obviously must have the authority to implement the program.

Thus, a state need not place all coastal zone management authority in one agency, but if it does elect to use more than one agency, it must assume that the program it designs coordinates and integrates these agencies' powers.

The first general technique--state standards for local implementation--is perhaps the most common technique for resource management programs. Typically, the state legislature passes a law which states the overall policy and goals of the legislature with respect to particular coastal problems and assigns the program to a specific state agency. This normally requires promulgating guidelines and criteria for implementing the policy and goals. Further, it requires local units of government to design and to implement programs that comply with the guidelines and criteria. The state agency to which the program is assigned reviews the local governments' plans and programs to ensure that these comply with the law.

Once this traditional structure is established, certain powers are given to the state agency to ensure compliance by the local governments. For example, the state might have the ability to cut off funds to local governments which do not comply; or the state agency might have power to veto a local plan or program; or the state agency could override the local governments if they did not act within a certain period of time. Three states--Washington[22], Michigan[23], and Maine[24] have passed laws relating to shoreland uses which follow this particular technique. In each case the primary responsibility for implementing the shorelands program rests with local governmental units. To assist them, a state agency (or agencies) is assigned the task of developing guidelines and criteria the local governments can use. Should local governments fail to act, the state government is empowered to take over the local unit's responsibility.

The second general technique involves direct state land and water regulation. In most states, power over land and water uses is in the state legislature; thus, the legislature could put all land and water use controls at the state level if it so desired. Considering the long history of land use controls at the local level, and the specific requirements in the Act for close coordination with local and regional organizations of government, however, it is doubtful how many states could or would opt for this general technique.

State level land and water use planning and regulation occur when a state level agency deals directly with a user. For example, the Delaware Coastal Zone Act of 1971[25], which banned heavy industrial uses of the coastal area as defined in that Act, directed the state planning office to regulate potential users of the coastal zone (in this case, industrial developers). Fish and game departments of state governments, most of which deal directly with users, are another example. State land offices are yet another. Many states have adopted wetland protection laws; Georgia, Connecticut, Massachusetts, and Maryland are among others.[26] Many of these wetland protection programs are managed at the state level. The state agency charged to implement them deals directly with a user who wishes to construct on or otherwise use coastal wetlands.

A state which elects to use this technique has three terms which it must define. First, the state level planning and regulation is direct. If this technique is combined with other general techniques there may be intervention of substate units, however, in most cases, as discussed above, the user deals directly with a state agency.

The state level planning and regulation relates to land and water use. In most states land use control and water use control have developed along different lines historically and are now in different agencies. Hence, land and water use planning and regulation, where units are in different agencies, must both be at the state level to meet this particular requirement. States should

remember that where a natural resources agency has been formed, frequently land and water uses may be combined under one administrator. However, even when this is the case, basic laws will differ, thus requiring different administrative techniques.

The state must have direct control over comprehensive planning and regulation. In most states, comprehensive planning and regulating have evolved along different lines. These are beginning to reconverge where, for example, state natural resource departments are developing planning divisions. States should remember that this technique does not require a single agency. It only requires that for each aspect of the coastal program--planning, regulation, land, water--that the state level agency be dealing directly with user groups. It is not clear whether this general technique can be used successfully in its "pure" form. It may generally be used in combination with other general techniques.

The third alternative general technique involves state administrative review of all development plans, projects, or land and water use regulations in the coastal zone to ensure consistency with the management program. This suggests adopting a plan for a state's coastal zone. Under this interpretation, all activities in a state's coastal zone must conform to the plan or be permitted under a variance. The comprehensive planning and zoning ordinances common to cities and municipalities are analogous to this plan technique. The Three phrases in the statutory provision suggest a plan: (1) all developmental plans, projects, or land and water use regulations must be consistent with the management program; (2) "exceptions" and "Variances" as these words are used in the Act imply a relationship to comprehensive plans; and (3) the state review of projects relates to "consistency" with the state management program, thus suggesting a fairly detailed program containing use designations. These provisions add up to a plan.

This plan approach could involve approval of the management program by the state legislature. Again, by analogy to municipalities, the city council normally approves comprehensive plans of the city. Further, if the state is to review regulations and development plans and projects for consistency with the management program, then the state legislature's approval of the program would seem necessary. The legislature would have to make clear the supremacy of the plan over other state laws if the plan is to have its intended effect. Two examples of this approach are the San Francisco Bay Conservation and Development Commission[27], and the Lake Tahoe Regional Planning Commission[19]. These commissions, operating at a regional level, have developed plans which are being implemented through a regional organization[28].

There are policy plans and comprehensive land use plans. The San Francisco Bay Plan is a policy plan. General guidelines and principles control the Commission's issuing permits on all uses 100 feet from the shoreline. These guidelines and principles are frequently called performance standards. The comprehensive land use plans, usually produced with HUD 701 funds, designate land uses for specific geographic areas. The Florida Coastal Zone Management Atlas and Guidelines[29] combines a policy plan and a comprehensive land use plan. It classifies the entire coastal zone of Florida into categories which indicate the general recommended use of the area. Within those areas a series of guidelines are developed providing more specific guidance to users, local government planners, and others involved in coastal zone planning.

3. Adequacy of State Laws

The agencies a state chooses to administer its coastal zone management program must have, in addition to using one or a combination of the general tech-

niques above, authority for the management of the coastal zone. This authority shall include power -

(1) to administer land and water use regulations, control development in order to ensure compliance with the management program, and to resolve conflicts among competing uses, and

(2) to acquire fee simple and less than fee simple interests in lands, waters, and other property through condemnation or other means when necessary to achieve conformance with the management program. (Section 306(d).)

The authority, or power, to administer land and water use regulations applies only to those authorities necessary to implement the management program. The management program is a series of proposed actions and regulations in a single document that follows the Act's provisions. The agencies' authority need only relate to what is needed to implement the management program. Authority broader in scope than is necessary for the management program, however, does not present a problem. Only if the chosen agencies do not have sufficient authority to implement the management program would the state have to increase the level of authority before the Secretary could approve the state's management program.

The agencies chosen to implement the state's management program must, then, have sufficient authority to administer land and water use regulations. Usually, the state's constitution, legislature, executive branch (executive orders, regulations) or its judiciary would be the mechanisms to grant that authority. To have this authority implies that the agency exercising the authority must approve a proposed action under the management program before it could happen. For example, a state's management program might require that a permit, license, or letter of no objection be issued before anyone could act on the proposal in question. As a further example, the authority might require specific control over grants of money before it allowed a particular action.

Most states will not have difficulty finding sufficient authority within state agencies. Traditionally, state legislatures have freely given authority to control more activities than most state officials would seek to control. What states lack uniformly is a coordinated program under which the variety of authorities and agencies are coordinated to implement a management program. Texas provides an example of this need for coordination. Under a new law, the General Land Office of Texas administers public submerged lands in the state's coastal zone. The state's water control board covers issues of water use and water quality control. Local governments control land uses in coastal areas which might have an impact on coastal waters. There may be sufficient authority distributed throughout the agencies in the state of Texas to meet the requirements of the particular section. The challenge for Texas coastal planners is to develop a program which coordinates effectively the three efforts. Louisiana is an example of how insufficient authority might exist. The Louisiana Wild Life and Fisheries Commission, along with the State Land Office, can review activities occurring below the high water mark. Some municipalities in the coastal zone have zoning powers adjacent to coastal waters. However, the Wild Life and Fisheries Commission and State Land Office have no guidelines or programs on which to base decisions on uses of coastal waters. Further, many parishes (counties) in Louisiana's coastal zone do not have zoning authority from the state legislature. Therefore, only private decisions by adjacent landowners would determine impacts on coastal waters. For this reason, to develop a coastal management program which meets the Act's requirements, Louisiana may have to consider revising some of its laws.

The state's authority must also include power to control development to en-

sure compliance with the management program. The state must decide whether to define development narrowly or broadly. Popularly, development is normally synonymous with construction and "improvement". But development could also refer to recreational development, development of fisheries resources, land development for living resource productivity (e.g., agriculture, water fowl, fish farming). The common denominator for development is the concept of change. Usually, as or after some human activity occurs to a region which changes it, this is called development.

Development control is also subject to either narrow or broad interpretation. A control could prohibit or limit development. It could also guide and direct development. A state has available several techniques for controlling development: zoning; creating special districts; incentives; a licensing system with performance standards; and the placement of key facilities (roads, water and sewage, utilities). Each of these will be discussed briefly.

First, shoreline zoning has been occurring in many states. This type of zoning delineates areas in which certain uses are preferred and certain uses prohibited. Examples abound. In the Great Lakes area, numerous state and local governments are encouraging development setback because of the serious erosion problem along the shores of the Great Lakes.[23] These zoning requirements mean developers are to build far enough back from the shoreline to make expensive shoreline protection works unnecessary. Both Georgia[30] and Delaware[31] have controls over beaches and dunes instituted in the form of zoning at the local level.

Second, creating special districts to achieve certain objectives in a coastal management program is common. In Louisiana, the Louisiana Deep Draft Harbor and Terminal Authority was created to promote the development of a superport and still protect the environment in which that superport authority can control development and determine how the region will be used. States should be cautious in using special districts for although they can be designed to deal neatly and efficiently with one or two management problems or objectives, their limitation in scope of interest may result in the lack of comprehensiveness and in fractionating coastal management activities. Also, special districts frequently become autonomous because of special dedicated revenue sources unique to them and local political bases. Hence, once established, it may be difficult to combine them with other functions or make them responsible to an overall coastal zone management program.

Third, using incentives to bring about certain desired results is a technique all levels of government use. The most typical incentives involve funds. Local governments might place taxes on certain developments to discourage them and simultaneously relieve the tax burden in other areas to encourage a particular kind of development. Local Boards of Assessors in Massachusetts abate real estate taxes in exchange for conservation easements. Under the Williamson Act of California, land left in agriculture or otherwise conserved receives a tax break. Using a state's spending power to encourage desired results is another example. A state agency, using grants-in-aid to local governments, can control local activities to some extent. This has been done to a limited extent in Florida where the Coastal Coordinating Council, a state agency, provides small planning grants to local planning commissions as long as they apply the coastal zone management principles the state has adopted.

Fourth, a licensing system combined with performance standards is a technique a state can use to control development. This is the traditional permit system. Actions are only licensed if they conform to certain guidelines, criteria, and standards promulgated at the state level. This system is in effect

in many parts of the nation, the wetlands control statutes in effect in many states along the Atlantic and Gulf of Mexico coasts are notable examples of this.

The placement of key public service facilities--among these, roads, water and sewer lines, and utilities--effectively controls the scope and type of development occurring in the new area. In California, for example, the issue of whether a new area should be opened for housing development arises quite often when the local government unit must vote on authorizing the expansion of a water, sewer, or drainage district or the siting of a new road on the county's master road plan. Critical decisions about the opening of undeveloped areas for development frequently turn on the question of requirements for additional public service facilities necessary for the proposed development.

The ability to resolve conflicts among competing uses must be part of the authority of the chosen agency or agencies administering the management program. Competing uses include those causing controversies over space in the coastal zone, over a limited stock resource, or over access to areas and resources, and over changes in society or in the environment. Trading a productive marsh for a power plant site, or a pipeline corridor for oyster beds, is competition both for space and for a limited resource. When there are too many fishermen or an overcrowded beach, this is competition for a limited stock resource. When there is no access to a public beach or out-of-state fishermen are excluded from domestic shellfish beds, this is competition for access to areas and resources. Finally, competition is the result when it is necessary to choose between added pollution or an increased tax assessment--the competition occurs because of the environmental and social impact of one use on another.

An additional aspect of competing uses is whether it is considered in a short-term or long-term context. In the short-term, competing users need to have a decision made regarding a specific piece of real estate or loss of resource or equipment. This type of competing use demands a decision-making process which can resolve the controversy. In a long-term context, competing users can turn to management program or planning tool whereby conflicts between competing uses are minimized through technology, government controls, public education, or other avenues. This long-term context normally revolves around a planning process and a subsequent management program.

States must be able to resolve conflicts among the competing uses. However, to resolve conflicts may be only one part of a coastal management program. Where there is no apparent conflict, presumably use of coastal resources would continue. For example, in marshland areas, many dredge and fill permits are issued without objections. Yet, there may be no assessment of the cumulative effect of many small projects. It may be that there is no conflict only because it has not yet materialized. The problem of resolving a conflict usually involves a long series of decisions on various aspects of the conflict involving people, agencies, public and private groups. It is rarely a one issue/one decision-maker process. Hence, states should consider the conflict resolution process in developing their coastal zone management programs.

The administrative process a state develops in its management program will usually reflect the fact that a major conflict is resolved through a series of steps, not just one. For example, a state might have an administrator who initially decides to grant a permit or deny it. He can handle, routinely, many small projects. Where there is controversy, or where the administrator believes a decision of his board of commissioners is necessary, he can refer the matter to the board on an administrative appeal. Here, it is presumed, the conflict would be well developed. Public hearings would be held with

expert testimony and cross-examination of witnesses. The board would render a decision on the issue.

The administrative process designed to resolve conflicts among competing uses must address a number of additional questions. For example, upon whom does the burden of proof lie? Who must come forward with initial evidence to show that the coastal management program is being met, or being violated? Frequently, this is a critical part of the administrative process. Also, the criteria for making decisions with respect to proposed uses of the coastal regions can limit a decision-maker's freedom of action in many ways. For this reason, a very detailed list of permissible and non-permissible coastal uses can make the resolution of conflicts much simpler. This may also mean fewer matters are litigated because the area of uncertainty would be limited. These are only some of the details of administrative procedures and the drafting of legislation and regulations; states must be aware of many others.

State coastal management programs may include authority to acquire fee simple and less-than-fee simple interests in property. A fee simple interest in property includes the maximum number of rights an individual can have with respect to real property. These rights include the right to sell the property, the right to lease it and earn money from it, and the right to alter it in any way (subject to law). Less-than-fee simple interests in property include: right-of-way and access easements, development rights, surface rights (designed to exclude mineral rights), scenic easements, and remainder interests (property interests remaining after property is used by an individual during his lifetime).

There are two views as to whether a state coastal management program must include powers to acquire fee simple property interests through condemnation "or other means" (306(d)). One reading of the section leads to the view that the power must be in the chosen agency or agencies since it says the authority "shall include power...to acquire fee simple and less-than-fee simple interests in land." Another interpretation is that the powers to acquire property interests are required only if necessary "for the management of the coastal zone in accordance with the management program." Hence, if a proposed management program does not call for the acquisition of property interests then, presumably, these powers would not have to be included. States must determine for themselves whether the power to acquire property is a necessary part of their coastal program.

States may acquire property interests through condemnation or other means. Condemnation requires the exercise of the power of eminent domain. States have, for the most part, codified their laws pertaining to eminent domain (condemnation). States must determine for themselves what the words "or other means" refer to. Some suggestions: states may purchase property rights; states may receive a donation of property; states may exchange property of equal value for the desired property; and, states may lease various interests from property owners. The State Development Corporation of New York has been created to purchase rights in lands and use them to control and direct development in certain areas. The California Land Bank has been established with the same purpose in mind. Maine has created a Development Corporation to promote aquaculture. In England, lands are purchased by the Green Belt Commission to preserve key parcels.

The property interests acquired by the state can be "lands, waters, or other property". Acquiring interest in land is a fairly common occurrance and is adequately dealt with in state law. However, acquiring "waters" is less clear and is a rare occurrence. Normally, states own water bottoms (except where they have conveyed them away), and in many cases they claim to own the waters as well. One can see situations where the state, through its coastal management program, could acquire a private lake or coastal pond, if those waters

were nonnavigable. Conceivably, the state coastal management agency could acquire from its general state land office a portion of navigable waters for landfill purposes. Again, whether this acquisition refers to the waterbottom or the water itself is an unresolved question. In western states, water rights can be purchased, or condemned, for a public purpose--usually only in those states where the appropriation system for water rights is in effect. Presumably, states which do not claim ownership of ground waters could purchase or condemn recovery rights for ground water beneath private property.

States may acquire "other property" in addition to lands and waters: improvements of or facilities on land (e.g.,buildings, recreational equipment). Any personal property, movable or immovable, might also be included in "other property". Most authorities or agencies created at the state or local levels are given general power to acquire and hold property. The critical issue generally is whether the authorities or agencies may exercise the power of eminent domain. As long as a governmental unit competes in the market place, there usually is no legal objection to its acquiring and holding property.

CITATIONS

1. Marks v. Whitney, 98 Cal. Rpts. 790, 491 P2d 374, California, 1971.

2. University of Michigan Coastal Zone Laboratory, "Directory of Laws, Regulations and Agencies Which Affect Development in the Coastal Zone" (due for publication late in 1974).

3. John H. Noyes, "Directory of Massachusetts Natural Resources Agencies", Publication No. 29, Cooperative Extension Service, University of Massachusetts, 1972.

4. C. Leavell, Legal Aspects of Ownership and Use of Estuarine Areas in Georgia and South Carolina, Institute of Government, University of Georgia, 1971.

5. D. Halperin and H. Henry, Maine Law Affecting Marine Resources, School of Law, University of Maine, Portland, 1969--1970.

6. North Carolina Law Review: Special Issue on Coastal Law, 49 N.C.L.R. 857, August 1971.

7. Department of Navigation and Ocean Development, Comprehensive Ocean Area Plan, Vols. 1-6, State of California, 1969-1972.

8. The Interagency Council on Natural Resources and the Environment, Texas Coastal Resources Management Program, State of Texas, December 1972.

9. Texas Coastal and Marine Council, Vernon's Ann. Civ. Stat. art. 4413(38), Supp. 4, 1973. (See Also, Texas Public Lands Management Act, Vernon's Ann. Civ. Stat. art. 5415e-I et seq., Supp. 3, 1973.)

10. California Coastal Zone Conservation Act of 1972, 3 Pub. Res. Code 27000 et seq., Deering, Supp. 1973.

11. F. Bosselman, et al., The Taking Issue, President's Council on Environmental Quality, 1973. (See Also, F. Bosselman and D. Callies, The Quiet

Revolution in Land Use Control, President's Council on Environmental Quality, 1971 and I. Heyman, "Innovative Land Regulation and Comprehensive Planning", Santa Clara Law, 13;185-235, Winter 1972.)

12. Charles E. Little and Robert L. Burnap, Stewardship, Open Space Institute, 1965.

13. Maryland Wetlands Act, Md. Ann. Code art. 55c, §725, 1970.

14. New York, Environmental Conservation Law (McKinley 1973), §7-010, note §§260, et seq.

15. New Jersey Green Acres Act of 1961, N.J. Stat. Ann., §13.8A-1-13.8A-18, 1972.

16. Florida Land Conservation Act of 1972, Fa. Stat. Ann., §259.01, 1974.

17. Louisiana Deep Draft Harbor and Terminal Authority, Environmental Protection Plan, State of Louisiana, 1974.

18. Jens Sorensen, "Coastal Zone Management in California: Three Factors Influencing Future Direction", Proceedings, Coastal Zone Management and the Western States Future, Marine Technology Society, Los Angeles Region Section, 3 and 4 December 1973.

19. Tahoe Regional Planning Agency, "Land Use Districts Map" and "Land Use Ordinance", 1972.

20. Chicago Park District, The Lakefront Plan of Chicago: A Summary Report, City of Chicago, 1973.

21. Peter M. Douglas, "Coastal Zone Management--A New Approach in California", Coastal Zone Management Journal, 1(1):1--26, Fall 1973.

22. Washington Shoreland Zoning Act, Wash. Rev. Code Ann. §90.58.000 et seq., Supp. 1971.

23. Michigan Shoreland Zoning Act, Mich. Compil. L. Ann. §281.631, 1970.

24. Maine Shoreland Zoning Act., Me. Rev. Stat. Ann. tit. 12, §4811, Supp. 4, 1973.

25. Delaware Coastal Zone Act of 1971. Del. Code Ann. 7001 et seq., 1972.

26. Earl Bradley, Jr. and John Armstrong, A Description and Analysis of Coastal Zone and Shoreland Management Programs in the United States, Sea Grant Program, University of Michigan, 1972.

27. San Francisco Bay Conservation and Development Commission, San Francisco Bay Plan, State of California, 1969.

28. The American Law Institute, A Model Land Development Code, 1971.

29. Florida Coastal Coordinating Council, Florida Coastal Zone Management Atlas: A Preliminary Survey and Analysis, State of Florida, 1972.

30. C. M. Parrish, III, et al., Glynn County Beach and Dune Study, State of Georgia, 1973.

31. Delaware Beach Preservation Act of 1972, Del. Code Ann. 7§6801 et seq., Supp. 1972.

B. Organizational Ability to Implement

1. Introduction

Designing the organizational mechanism a state chooses to implement the goals, policies, and controls of its coastal zone management program is one of the most critical steps it will take in its program development effort. To comply with the Act's requirements in designating its organizational structure, the state should answer several important questions:

- How can the state coordinate its actions with those of local, regional, and interstate agencies in developing and administering the state's coastal zone management program?
- How can it coordinate this program with existing plans?
- How can the state best administer land and water use regulations and control development to ensure compliance with the Act and to resolve conflicts among existing and proposed uses in the coastal zone?
- What means are available to acquire interests in property, both land and water, if this action is necessary to conform with the state's approved coastal zone management program?
- What steps can the state take to assure effective continuing consultation and coordination with local governments for their full participation in carrying out the Act's purposes?

The particular organizational approach a state selects to comply with the Act and satisfy its own needs will depend on several factors:

First, that approach, or combination of approaches, identified in section 306(e)(1) of the Act which would be most effective for the state; second, the structure and effectiveness of existing programs which control or regulate uses and activities in the state's coastal area; third, the most effective distribution of administrative responsibilities among the local, regional, and state agencies and units of government; fourth, the functional role and authority of the state's designated lead agency; fifth, the most effective means of coordinatingand correlating the individual management responsibilities authorized by the coastal zone management program; and sixth, the governor's role in implementing the program goals and policies.

A state should consider these six factors as well as others that might be peculiar to individual states if it is to establish an effective management structure for its coastal zone.

In the next part of this section we discuss the organizational arrangements a state should consider as it creates its coastal zone management program. These include complying with federal requirements; designing the most effective lead agency for that state; and clarifying the roles of the governor and substate elements in the state's management program. Part 3 of this section includes discussions of some of the problems a state can anticipate in structuring its organizational capabilities; among these, program costs, legislative and public support, legal adequacy, interim controls, and distribution of management responsibilities. Part 4 deals with cooperative mechanisms, including needs for and mechanics of coordination.

This section of Chapter III is closely related to other discussions throughout the document. The previous section, Means of Exerting Control, discusses a variety of implications in organizing to implement, among which is the legal adequacy of existing and proposed programs. The following section, Cooperation and Coordination with Federal Agencies, deals with another important planning element a state should consider in working to maintain effective mechanisms as part of its management structure.

2. Organizational Arrangements

Under the Act (306(e)(1)), each state must select one or a combination of up

to three approaches to coastal and water use management (see also Section III A, Means of Exerting Control). Each has advantages and disadvantages.

First, a state could establish criteria and standards for local implementation, but retain responsibility for administrative review and enforcement of compliance. Among the advantages of this approach are minimizing opportunities for ineffectual bureaucracies to develop; taking advantage of mechanisms and capabilities in existing programs; developing close working partnerships among state and substate units of government; and providing for decisions to be made close to where their impacts would be felt.

Among the disadvantages of this approach are risking establishing a complex management structure which could require a high degree of sophistication and a large and detailed structure to operate; risking local agencies' misinterpretations or inconsistent enforcement of state-set criteria and standards; and dealing with varying degrees of technically competent local governmental units.

Second, a state might assume responsibility for direct planning and regulation of land and water uses. Advantages to this approach include facilitating program modifications to reflect changes in attitudes and conditions; facilitating licensing and regulatory operations; increasing the likelihood of equal treatment of all people in similar circumstances; minimizing the size of the technical staff necessary to implement management programs; and having easier access to final regulatory authorities.

Disadvantages of this approach include the possibilities of creating unmanageable bureaucracies; the difficulty of policing and enforcing the management program; the possible lack of checks and balances to identify and deal with potential inequities; the potential difficulties of supplanting/duplicating traditionally local responsibilities, including the state agency's possible unawareness of or insensitivity to local problems and conditions; and inadequate access to appeal decisions without litigation.

Third, the state might choose to review for consistency with its state-wide plan or program all local programs and decisions involving plans, projects, or land and water use regulations, including exceptions and variances granted to both the public and private sectors. Advantages include maximum state awareness and sensitivity to local problems and conditions; decision-making close to where its impacts would be felt; utilization or development of local initiative and prerogatives; extensive use of open public review; and flexibility built into the program through local variances.

And disadvantages include the risk of extensive demands to adjudication by all interests; a changed political climate could change priorities; the necessity for articulating clearly policies and objectives to local units and for having these reflect changes in conditions and attitudes.

Many states will opt for combinations of two or even all three approaches as they establish their management programs. A state might choose to set standards, for example, for sedimentation or water runoff, but leave policing and enforcement to local governments. The same state might assume control for siting and regulating major facilities (e.g., power plants, refineries, heavy industry), but allow the sub-state governments to control the zoning of the rest of the coastal areas. Whatever approach or combination of approaches a state selects, it must have a single lead coastal zone management agency.

The lead agency: Section 306(c)(5) of the Act requires that the governor of each coastal state designate "a single agency to receive and administer the grants for implementing the management program". And Section 920.16(d) of the Section 305 regulations states that this lead agency shall have

(1) Authority to correlate the activities of all state, local, areawide/regional, or other entities in the coastal zone;

(2) Appropriate access to the Governor; and
(3) Requisite powers set forth in Section 306 of the Act.

In requiring that each state designate a single lead agency the Act and the Section 305 regulations acknowledge the problems inherent to ad hoc approaches. They also encourage states to make an integrated comprehensive assessment of their coastal zones and to establish effective management programs to resolve problems on a coordinated and rational basis. In fulfilling the federal requirements and satisfying the state's needs the lead agency might serve a variety of functions.

First, the lead agency might assume partial or even total regulatory responsibility for controlling land and water uses in the coastal zone; some of these responsibilities might be transferred from other agencies or governmental units (e.g., regulation of offshore oil and gas leases; regulation of port and harbor development; regulation and control of hazardous areas (flood plains, erosion zones); wetlands protection; regulation of filling and dredging; regulation of facility siting). In cases where the state did not assume all the authority to regulate coastal zone resources, this responsibility would be divided between the lead agency and the substate units already involved. Rhode Island uses this type of approach under the authority of its Coastal Management Council Act (Act 279-1971)[1]. A state should carefully and clearly define the lead agency's regulatory authority, either in the enabling legislation or in the rules and regulations it promulgates under that legislation. (See Section III-A for discussion of legal authority.)

Second, the state might choose to limit the lead agency's responsibilities to coordinating other state agencies' activities to ensure that their coastal-related actions are compatible with the state's coastal zone management program. In this case, the lead agency would promulgate and enforce rules and regulations established under the coastal zone legislation. A variation on this approach would be to establish administrative review procedures that would assess major proposals' impacts according to the combined views of all concerned state agencies and substate units. The governor of Massachusetts, by executive order, has established this procedure for all permits and licenses that require his signature[2]. The kinds of proposals that a state might review in this way could include highway layout or construction, siting of major facilities, state or regional park development, waste disposal, state planning, public services, or energy policy. In this case, most of the regulatory responsibility would remain with those agencies currently responsible, but the state could make any coastal-related policies or objectives consistent with those of its coastal zone management program. Too, it is essential that future legislation with implications for coastal zone management should include requirements for coordinating mechanisms or other devices to assure policy compatibility among existing and future programs.

Third, the lead agency might establish and indirectly enforce standards and criteria for uses and activities that occur in the coastal zone. This way, the agency could leave enforcement to others and still retain certain responsibilities for effective management. The standards it adopted must cover water and air quality for all uses and activities. Such standards might also cover storm water runoff; sedimentation and associated turbidity; social equity; and amenity protection. The criteria it adopted might cover intrinsic suitability; use intensity; resources carrying capacity; water zoning; interruption of tidal flow, and others related either to use or geographic areas. Because this is an indirect means of controlling coastal zone uses, the state should be especially careful that its criteria and standards are reasonable and enforceable.

Fourth, the agency with lead responsibility might become a mediator among the various levels of government in conflicts among them that involve the state's coastal zone. The state might choose to combine this mediator's role with a lead agency role as coordinator of state-wide coastal-related programs. This could be especially useful in resolving conflicts over shared resources or overlapping jurisdictions of two or more governmental units. For example, local and regional concerns involving the siting of a major facility or the filling of a specific wetland might conflict. The lead agency could supply the forum to reconcile the differences. The Lead agency could also help reconcile differences among those factions interested in change and those interested in maintaining the status quo. The state should conceive and carefully define legislatively the limits of the lead agency's mediator position because the conflicts it does not mediate could easily then require adjudication.

Fifth, the lead agency's role might include a research function, through conducting or supporting research, to provide technical bases for solutions to the state's coastal-related problems. This would include primarily problem-oriented research (e.g., determination of criteria for siting heavy industry) to assist in decision-making. The state's perception of the role of research and of its own role in accomplishing the research will help determine how the research function should fit into the management program's organizational structure.

Sixth, the lead agency might establish an information clearinghouse to coordinate the flow of information into and within the organizational structure, as well as disseminating it to those parties with coastal zone interests and responsibilities. The type of information involved could include basic scientific data used to define and assess the coastal environment; inventory dat about the physical, social, and economic elements of the coastal environment; research results; impact assessment; judicial decisions; additional legislation affecting the state's coastal zone; and land and water use trends. The users of this information might include regulatory or licensing agencies; legislative research bureaus; the academic/research community; parties of suits in litigation; private businesses; and, in some cases, the general public. The degree of direct involvement that a state chooses for this activity will determine the type, scale, and detail of information involved as well as the type of infrastructure required.

Seventh, a lead agency's responsibilities might include a combination of some or all of the functions discussed above. This will depend on the establishing authority, the program needs as the state perceives them, and the conditions under which the program must operate.

To accomplish these functions, some states may decide to establish a new agency. Reasons they might choose to do so include encouraging innovative approaches to problems that might not be possible in existing agencies; freeing new talent from entrenched biases and ineffectual policies that might exist in present agencies; and allowing opportunities for the agency to gain public trust without having to overcome mistrust associated with an existing agency.

In some states, it might be necessary to persuade the legislature a new agency is necessary. Once this need was established, a new agency's difficulties might include a relatively weak position in the state government structure because of sensitivity of existing and entrenched political power structure; a new staff's incomplete understanding and capability to deal with established political and administrative policies; opposition from vested interests in existing agencies with coastal-related responsibilities; possible inability to

obtain adequate funding because of existing agencies' established priorities; and possible length of time required to gain the legislature's confidence in--and thus assistance with--new programs.

If it chooses to create a new coastal zone agency the state should consider carefully the legal base from which that agency must act. The new agency's powers and authority should be clearly defined in the enabling legislation, and they should be easy to translate into administrative, legislative, or constitutional action (see also, Section III-A, Means of Exerting Control).

Other states might decide to designate an existing agency as the lead agency. Although this would avoid some of the difficulties inherent to establishing and using a new agency, it is not without drawbacks. Among these might be interagency rivalries, which might result in ineffective coordination among agencies; bias or limited scope of interest because of previous or ongoing responsibilities (e.g., erosion control, fish and wildlife); increased bureaucratic inflexibility; lack of public confidence because of agency's past performance, a tendency to increase the agency's responsibilities without providing adequate additional funding; and a tendency to maintain the status quo rather than to try to develop innovative approaches.

Several available documents discuss agency arrangements, problems, and states' experiences. For a discussion of approaches to environmental problems, see Environmental Management: Nine States Seek the Answer[3]. For a discussion of land use controls, see The Quiet Revolution in Land Use[4]. For brief discussion of different states' experiences in coastal zone management, see A Description and Analysis of Coastal Zone and Shoreland Management Programs in the United States[5]. And for additional and more specific references refer to the state and regional bibliography that appears at the end of this document.

The role the lead agency assumes will, with the kind of program the state chooses, have a tremendous effect on its final structure, for the Act requires that each state must establish sufficient capability to assure implementation and enforcement of its policies (see also Section III-A).

The organizational structure of the lead agency could take one of several forms. First, as a new organization, the state could establish a coastal commission to make specific policy decisions and carry out other functions. In states with extensive shorelines, the commission could delegate authority to substate regional units to deal with regional problems, plan, grant permits, and accomplish other functions within their areas of concern. California uses this type of structure, which the passage of Proposition 20 in 1972 established[6].

Second, also as a new organization, the state might establish the coastal zone management agency as a new line-agency, or a new subdivision of an existing line-agency, to carry out program policies and controls. This might include creating regional offices of the lead agency which could deal with day-to-day matters and gain a closer perspective of local or regional problems.

Third, the state might delegate lead responsibility to an existing agency. This might or might not include transferring coastal-related responsibilities of existing agencies into that agency. In this case, the agency might establish new facilities or expand existing regional facilities if these were warranted.

Fourth, the state might create a special organization within the governor's office to assume lead responsibility in directing coastal zone activities of state agencies and/or substate units. This organization might delegate substantial authority to specific units at all levels within the state and still retain coordinating and overview responsibilities, including financial overviews.

Fifth, the state might assign lead responsibilities directly to a substate regional organization. A state might use this approach if it has limited shoreland areas. The substate responsibilities might include program formulation and implementation with the state role limited to fiscal approval and administrative review.

The governor's role: Section 306(c)(4) of the Act requires that the governor review and approve the state's coastal zone management program as a prerequisite for federal approval. In doing so, the governor acknowledges his state's intention to carry out the Act's objectives.

On certain key problems the governor might serve as final state authority (e.g., final approval of state permits). In other problems he might serve as arbiter or mediator in intergovernmental or interagency disagreements. It is for these and other related reasons that the agency with lead responsibility should keep the governor's office fully aware of developing problems and controversial proposals, as well as its plans and proposed activities for the coastal zone.

The governor's authority and influence varies considerably from state to state. In some states the governor might have strong override powers on agency activities. In others his powers might be limited almost to a caretaker's role. Because the governor's political powers are liable to change from administration to administration, the chief executive's role might also change significantly. His ability to function with the state's legislature will be key to his effect on the coastal zone management program.

The governor's role, in most cases, will be closely related to any legislative action, especially when new authority must be established, interagency agreements given authority, and budgetary supports required. In these cases, difficulties could arise which could affect a state's compliance with the Act's requirements. If the governor and the legislature were to disagree on what constitutes an appropriate program and institutional arrangements to implement it, legislative proposals could then become embroiled in philosophical conflicts or partisan politics. For example, the legislature might enact a coastal zone management program which the governor would then veto; after that, the legislature could override the veto. The Secretary of Commerce would then have to decide whether or not he could legally approve the program under the provisions of Section 306 of the Act.

The role of substate governmental units: The Section 305 regulations (920.14) call for a state "to determine the appropriate role of local governments in administering its coastal zone program". The regulations recognize that local governments are the units most closely associated with the impacts of coastal zone management policies and decisions.

As it attempts to identify local governments' roles in its coastal zone management program, a state should consider carefully several questions. First, how effective have local governments been in regulating and controlling resources allocation and distribution? Second, how effective have local governments been in protecting the integrity and viability of the coastal environment? Third, what were the causes of any shortcomings? Fourth, could these shortcomings be overcome with state assistance or must the state assume direct control? Fifth, what assurances or guarantees might the state provide in good faith that would prove that it could do a better job?

Section 306(c)(1) of the Act requires that local units of government have an adequate opportunity to participate in developing their state's coastal zone management program. States might decide to provide grants to local governments to help those units develop coastal-related plans or reconsider existing plans. Local governments can help the state identify early in the

program development process, those coastal areas or resources that are of more than local concern and those, the development or protection of which reflects local or substate regional interests. (See Section II-C, Geographic Areas of Particular Concern.)

Local governments may also, as part of the state's program development effort, hold public hearings on or otherwise determine local or regional coastal zone issues and problems to respond effectively to state program proposals. (See Chapter V, Public Participation.)

Participation of substate governments in coastal zone management program administration: The specific role of substate governments in administering the state program is something that the state and those units will work out during program development. State programs might use local governments extensively to implement major portions of the program, leaving the remaining program elements for the state to administer. In some states, a delegation-of-authority principle would allow local zoning boards to regulate coastal developments except in areas the program designates as of statewide concern. Local units might also have decision-making responsibility in certain areas where the state retains responsibility for certain critical use categories (e.g., power plants, public access, harbor development). The state of Washington has done this.

As the state determines the roles local units of government will play in implementing the state program, it should consider whether and what disparities exist in present local governments' authorities. Some local governments have specific powers authorized by the state legislature for land use zoning, permit programs, or taxation policies; others have limited powers with state or higher substate units possessing broader responsibilities. Some local units have authority to locate highways, park and recreation facilities, and plan for them as well as other programs. The states should consider these factors in designing its implementing organization and supporting legislation so that it can meet the Act's objectives. (See Section A of this chapter, Authority and Organization).

Participation of regional groups: Substate and multi-state regional organizations have traditionally had certain planning and management responsibilities in coastal areas which will, in most cases, continue in some form after states have adopted their coastal zone management programs. With this in mind states should design their implementing organization so it can coordinate effectively with pertinent existing agencies at all levels, such as:

- substate regional planning bodies (e.g., Nassau-Suffolk Regional Planning Board on Long Island);
- council of governments (e.g., Association of Bay Area Governments in the San Francisco region);
- special purpose districts or agencies (e.g., Chicago Park District in Illinois, Massachusetts Port Authority);
- interstate compact organizations (e.g., Tri-State Regional Planning Commission encompassing parts of Connecticut, New York, and New Jersey, Minnesota-Wisconsin Boundary Area Commission); and
- multi-state commissions (e.g., New England River Basins Commission, Gulf States Fisheries Commission).

In determining what, if any, functions existing or newly developed organizations of this type might perform in their coastal management programs, states should carefully consider a series of general principles which are pertinent to regionalism and which could affect the utility of such organizations. First, generally as the size of the "constituency" increases the more difficult it becomes to obtain public consensus about broad-focused issues (e.g., land use

controls) as opposed to narrow-focused ones (e.g., control of wetland alterations). Second, as the dimensions of the defined "region" increase the more difficult it becomes for the "interested public" to gain access throughout the planning process and for the concerned agency(s) to interest the"affected public" at any time. Third, problems with "regional" impacts are generally less complicated to study at the "regional" level. Fourth, economies of scale can be realized by conducting certain studies as regional efforts. Fifth, as the number of separable government units involved in an organization's decision structure increases (i. e., the number of jurisdictions and agencies involved in making policy) the more complicated it becomes for the regional group to define and maintain a specific direction. Sixth, the broader the mandate a regional organization must work with the less effective it will generally be in attaining its mandated objectives. Seventh, the problem-shed (i.e., geographic area associated with the problem) does not always correspond to the solution-shed (i.e., jurisdiction associated with the problem's solution). Eighth, a state's constitution will often serve as a constraint in its dealings with its neighbors. Ninth, the mandates and authority of government agencies vary from state to state which constrain their ability to act as equal partners in multi-state associations. Tenth, the mandates and authority of existing regional agencies might require legislative modification in order for them to perform functions as part of the coastal management program. These ten principles are far from an inclusive listing, but if states that envision regional agencies as part of their coastal zone management structure do not consider them in defining a regional role them adverse consequences will result.

. substate regional bodies: There are a myriad of responsibilities and interests this type of body already has which have coastal zone implications. Generally these organizations are presently involved in planning for land and water resources or in planning for more specific topics such as housing, population growth, transportation, and/or recreation for coastal areas. Other substate regional bodies include special purpose districts and are involved in supplying public services to people in specific geographic areas.

A substate regional planning agency could serve a variety of functions in the state's program. It could serve as an extension of the lead agency or as a linkage between the state and the coastal localities to alleviate the problem of information transfer between the two bodies while also enhancing public involvement in the formulation of state policies. It could provide a forum where localities can interact on matters of regional interest. It could serve as an information clearinghouse for collecting and disseminating information pertinent to coastal zone matters of the region. It could supply technical services to assist the localities in fulfilling their coastal responsibilities. Finally, it could prepare guidelines for the region that ensure uniform controls that localities can use to regulate coastal land and water uses.

There are both advantages and drawbacks associated with using a substate regional planning body. Among the advantages in such organizations are previously established ties with localities; jurisdictions defined by areas with distinct "personalities" or commonalities; enhancement of program efficiency by limiting contacts states must have; enhanced potential for interagency communications; availability of technical staffs; and that they can serve as an alternative to direct state intervention in local planning efforts. Among the drawbacks inherent to such organizations are traditional mistrust of regionalism by localities; disparities in size and competence of technical staffs; possible domination of agency by minority representation; inability to obtain public consensus about agency's function; and lack of enforcement authority to implement plans.

Special purpose districts usually encompass substate regions and are generally limited in scope of interest to one or two public service functions. In most cases such districts have been established to achieve certain objectives and were given mandates and authority to take whatever steps they deemed necessary to achieve the objectives. Such districts are presently involved in such functions as water supply, waste disposal, recreation, port development, resources conservation and public transportation.

There are also both advantages and drawbacks inherent to this type of organization. Among the advantages are the agency's traditional action-orientation and record of accomplishment' economies of scale and efficiencies of operation; and the availability of special sources of dedicated funding. Among the drawbacks are the traditional limited scope of interest, possible fragmentation of authority, general lack of overall control in coordinating individual efforts, and lack of accountability for actions.

. multi-state regional bodies: Existing organizations included in this grouping, like their substate counterparts, are primarily involved in planning activities. If states choose to develop joint programs with their neighbors, they must work within the limit of their constitutional powers, but make sure that the organization they use or develop is an effective one. For example, the organization should be given a narrowly focused mandate, its work should not duplicate in-state efforts, it should seek new sources of funds rather than compete with state agencies for funds, it should not have autonomous powers, and it should be dissolved within a predetermined length of time.

Multi-state regional bodies could help states in many ways to fulfill their coastal zone responsibilities. They could help formulate management programs for resources two or more states share (e.g., estuaries). They could serve as a forum where states could work out joint policies for problems of multi-state concern (e.g., super ports, oil refineries). They could manage a joint research program to help formulate management policies for a biogeographic region involving two or more states. They could serve as information clearinghouses. Finally, they could facilitate communications between states.

There are both advantages and drawbacks inherent to such organizations. Among the advantages are that they allow states a forum to evaluate programs in light of those of their neighbors; promote efficiencies in certain studies; free studies from being limited by political boundaries; and they can open up new sources of funding not generally available to states. Among the disadvantages are lack of enforcement powers; lack of visability or political operating base; tendency for limited state participation in studies; and limited utility of study results to member states.

3. Problems in Structuring Organizational Capabilities

As a state designs the structure to implement the policies and controls of its coastal zone management program, it should consider problems which might affect the structure it selects. Many of these problems were introduced previously in the discussion of organizational arrangements, but merit additional consideration. Some of them (e.g., sufficient capabilities, program costs) are inherent to the development of any new program whatever its structure. Others are pertinent to one or more of the three management approaches authorized by the Act (e.g., political realities, disparities among substate capabilities). States should anticipate these problems and either make a concerted effort to avoid them or be prepared to deal with them effectively if they arise.

From a complex management structure to bureaucracy: A state should be alert to symptoms and causes of ineffectual bureaucracies as it considers alternative management structures. An organization that is slow to make relatively simple

decisions might try to avoid complex or controversial ones. Timely effective decisions might be impossible to make; unnecessary delays, usual; lapses in internal communication, routine; and insensitivity to the public it was designed to serve, commonplace. Complex management structures can work effectively only as long as they are controlled and the distribution of authority and responsibility within them is clearly defined. In designing such an organization, then, the state should take several steps to make sure the necessary control and definition exist.

First, the state should define clearly the lines of authority. Second, it should identify publicly the review process each proposal or application must go through, including the steps involved and the checkpoints along the way. Third, it should identify specific individuals or offices who are responsible for each step. Fourth, it should adequately staff each component of the organizational structure and maintain it at a size that corresponds to its workload. Fifth, when more than one agency is involved, it should establish linkages at the day-to-day working level to speed flow of information. Sixth, it would keep unnecessary duplicative paperwork to a minimum; and eighth, it should include an independent mechanism that can assess continually the effectiveness of the organizational capabilities.

The multiplicity of existing agencies and their possible biases: Most states generally already have a plethora of programs and government activities in their coastal areas. As a result of these ongoing efforts there are bound to be interagency conflicts and rivalries which will surface with any attempt to consolidate or to coordinate them. In some cases it is the limited scope of interest of individual programs (e.g., control of submerged lands, energy policy) which might cause the problems. In others it is the biases inherent to the programs (e.g., wetlands preservation versus marina construction). Another cause, not unique to coastal agencies, might be the desire of an existing agency to perpetuate its current status.

Because one of the prerequisites for federal approval of the state's coastal zone management program is the resolution of organizational and institutional issues, a state should be prepared to resolve this problem early. To do so, it might be helpful to consider several questions. First, what are the critical organizational issues existing programs and activities cause? Second, what distribution of administrative responsibilities complies with the federal requirements and best suits the state's needs and conditions? Third, what institutional arrangements need to be established or modified to authorize sufficiently this administrative distribution? Fourth, which of those arrangements can be made without opposition from agencies responsible for existing programs? Fifth, where can trade-offs be made without compromising the state's coastal zone management program? Sixth, which of the organizational issues require arbitration? Seventh, which, if any, can be resolved only by action of the governor or by some other arbiter? Eighth, which alternatives should be offered to arbitration?

Adequacy of existing programs: To assess the adequacy of existing programs, a state should answer these questions. First, are the combined powers and authority of existing programs sufficient to comply with Section 306 (e) of the Act? Second, are these powers and authority adequate to deal effectively with the state's coastal-related problems? Third, if the answer to either of the previous questions is no, what modifications are necessary?

The tests for program adequacy include legal interpretation of bases for management, institutional evaluation for effectiveness, and environmental assessment for protecting integrity of coastal resources. Although all three tests are important in determining adequacy, the legal tests of the bases of

management are deterministic in gaining federal acceptance of the management program as adequate (See Section III-A, Means of Exerting Control, for discussion of legal adequacy of existing authority.

Because of the many existing programs and activities, some states might believe that they now have adequate capabilities to manage their coastal zones. For example, water pollution statutes protect their coastal waters; oil and gas regulations control development of these resources in the states' waters; highway masterplans control layout and construction of coastal highways; and zoning by-laws control the uses of shorelands. But simply the existence of these separate programs does not guarantee the adequacy of any state's effort. Generally a single comprehensive overview is necessary to assess thoroughly the combined effectiveness of the individual efforts.

Sufficient capability and authority to administer: The Section 305 regulations (920.43) caution states to ensure that as the coastal zone management program is being developed, sufficient capability to administer it should also be developing--at all pertinent levels. Implicit in this requirement is the need for states to define the roles of all agencies with coastal zone responsibilities or functions at all levels of government. In developing sufficient capabilities, states will find that the technical competence of the organizational components is just as important as the legal adequacy of their authority. Sufficiency here is, in part, a function of the distribution of responsibilities the management program authorizes. States should determine the capabilities each element of the organizational structure they choose to manage their coastal zone requires.

If a state establishes a new management agency and gives it control over land and water uses in the coastal area, this new state agency will require a variety of capabilities, from administrative to scientific. If, on the other hand, the state gives an existing agency the same authority, it would only have to supplement existing capabilities. Finally, if the state distributed the same authority to substate units, then the capabilities the state would require would differ from either of the above. Thus, a state could measure sufficiency by several standards. These might include ability to deal with coastal-related problems, public support, program flexibility, adequacy of requisite powers, resolution of organizational and institutional issues, and coordination of program with existing plans at all levels.

Policing and enforcing of program controls: The state should assure that its coastal zone policies will be carried out, whichever organizational structure it adopts. The responsibility of monitoring, policing, and enforcing program requirements could create institutional problems. First, a state might decide to use the policing capabilities of existing programs or agencies (e.g., fish and game wardens, public health officials, air or water quality officials). Unless additional financial support were to accompany this increased responsibility, all of the programs requiring policing might suffer. Second, by assigning policing responsibilities to substate units, the state might rid itself of some of the administrative responsibility, but unless some type of formal training were to accompany this additional responsibility, substate entities might not have the ability necessary to move with assurance against violations and complaints. Third, the police powers the state's program authorizes should be clearly defined and the consequences for violations or non-compliance with the program policies should be explicitly detailed. As an example, a state might use both civil and criminal procedures against violations of wetlands regulations, but the policing force might have difficulty in deciding which should prevail in specific circumstances. Fourth, with the

emerging public awareness and willingness to become involved in environmental affairs, a state might decide to allow private interest groups to intervene, both to try to prevent and to assess penalties for non-compliance and program violations. But if the state does not see that this is done carefully through the policing and enforcing functions, it might become involved in "backyard controversies" to the disadvantage of other situations more in need of attention. Fifth, a state should demonstrate clearly to its constituents how the policing and enforcing functions fit into its organizational structure to manage the coastal zone. This demonstration should include a separation of administrative elements from those of a judicial nature to make sure when the state must move against violators, it takes all reasonable administrative steps before it proceeds with court action.

The policing and enforcement capabilities a state requires will depend on the mechanisms with which it chooses to control the land and water uses in its coastal zone. When direct state control is involved, and a license or permit is required, then the capability and powers required might include means of monitoring uses and activities to identify violations; ways of restraining violators; means of restoring property to original condition if any physical alteration has resulted in a dangerous situation; requiring units or agencies to obtain licenses and permits; monitoring licensees once permits are given; restraining permit holders from violating provisions of permit, and methods of allowing intervention of public or private interest groups aggrieved by a violation or non-compliance.

A state that allocates management responsibilities to substate units will have a different set of policing requirements to ensure that the substate units can fulfill their management responsibilities. In this situation the capabilities and powers might include monitoring substate compliance; reviewing complaints from aggrieved parties; withholding state funds for non-compliance; mediating differences between substate units; and overriding local decisions when necessary.

Political realities and legislative support: Adequate legislative support is essential to the state's passage of enabling legislation for coastal zone management as well as for its continued funding and program amendments when these are necessary. Although legislative support is often correlated with public support, there still are varying degrees of independence when the time comes for specific legislative decisions. Strong communication linkages to legislative committees and to the entire legislature are helpful and should become an integral part of the coastal zone management program's organizational structure. Opponents of legislative proposals or initiatives can use misinterpretations of agency conclusions and recommendations to defeat legislative action unless the agency's actions have been clearly and precisely defined and understood.

Political realities might, for example, become significant when the state considers which responsibilities to transfer from one agency to another or when questions of legislative support of existing agencies becomes involved, or when the state considers the distribution of authority between state and substate units--especially if local units might have less control than they now have. The controversy which proposals can create in the legislature is another consideration. This controversy could be related to the degree of control needed (the taking issue) or the disruption of existing institutional arrangements. Finally, an understanding of political realities might be important in gaining continued fiscal support for the program. Inadequate awareness of political realities can result in inefficient programs for several reasons, which elected officials will not tolerate.

Disparities in abilities among substate units: Most states will have this problem in various forms, but it will occur especially in those that allocate much of their regulatory and control responsibilities to substate units. A rural community or county is seldom capable, in terms of staff and technical knowledge, to deal with complex regulatory programs the way an urban or suburban unit might more likely be. If the state allocates identical responsibilities to both units, then the rural unit may have a decided disadvantage in carrying out its responsibilities. States should consider this carefully as they determine management responsibilities and define the structure to carry them out. The disparity in abilities has many facets which might adversely affect a state's ability to manage its coastal zone.

First, most management responsibilities in small communities or counties are fulfilled by elected or appointed officials who often serve without either pay or staff support.

If these officials need technical capabilities which are not available, they must rely on volunteer assistance or consultants, both of which might prove unreliable. One solution to this problem might be for the state to establish regional offices or advisory capabilities to supply cost-effective technical services to the substate units as needs arise.

Second, the same piece of information will have different implications--or lacks thereof--to different individuals, based on their backgrounds and their interests. For this reason, states might wish to consider carefully which kinds of basic technical data it distributes where. For example, several pages of such data about the relation of stormwater runoff to sedimentation of estuaries will mean very little to local board members unless they have a technical background. Because the acquisition, collation, storage, and dissemination of technical information is an expensive operation, most communities do not use detailed, sophisticated performance standards and design criteria. A state could avoid this problem of too detailed or technical information, unused or misused, by establishing an information capability which substate units could draw on and from which information could be disseminated in a format which the substate unit would find usable and understandable.

Third, and closely related, sophisticated standards and criteria could cause problems in and of themselves if the substate units were unable to understand or to apply them effectively. Even if the burden of applying the standards is passed on to license and permit applicants, unless the government unit involved had the technical competence, it could not hope to judge how well the standards were applied. There are two possible solutions here. The state could supply technical advisory assistance or it could supply simplified versions of the standards and criteria to those without necessary staff capabilities (though the standards and criteria must still be fully effective).

Fourth, the possible bias of local judgment and opinions is another factor that can effect local capabilities. In many cases this is the result of trying to maintain status quo, misinterpreting issues, tending to make popular or expedient decisions, and refusing to adapt entrenched attitudes. These biases might result in citizens' mistrust of governmental functions, unnecessary litigation by aggrieved parties, and noncompliance with the policies of the state's management program. To resolve these kinds of difficulties, a state could create a positive environment of interaction in its dealings with substate units by working to build mutual trust and credibility. Since the alternative here is the imposition of state values and prerogatives without recourse (at the expense of local initiative) then the substate units would logically--though in some cases perhaps not without some struggle--become willing partners.

Interim controls pending state program adoption: A state might decide that interim controls are necessary or advisable to alleviate present threats to the coastal zone until its management program is adopted in toto. From the perspective of organizational requirements, here states should consider several questions; among these,

- At what point should it enact or adopt these controls?
- Which land and water uses demand this interim attention?
- What means of control are necessary?
- Are new institutional arrangements or coordinating mechanisms necessary to administer the interim controls?
- When should the interim program be fitted or integrated into the overall management structure?

A state should also be aware of two possible problems inherent in using interim controls. First, it may encounter opposition if it attempts to take on large-scale resource decision-making during its program development effort; the responsible agency may have to make reactive decisions and in doing so might lose public support and confidence if it appeared it were shooting from the hip. Second, the financial costs of administering interim controls might be higher than the state anticipated--to the point where political exploitation of the costs by factions opposing coastal zone management might endanger passage of the total program.

If a state determines immediate intervention is necessary it can use development moratoria for certain areas. This is more arbitrary than interim controls, but in some cases it is easier to achieve.

Segmentation is another possibility, one that the regulations (420.44) explicitly authorize with federal financial support. This approach focuses on establishing and implementing mini-programs in limited geographical areas (for detailed discussion of segmentation, see Section II-C, Geographic Areas of Particular Concern.)

Public Confidence and Support: Public confidence is an essential prerequisite for public support. For this reason, a state should include in its coastal zone management program mechanisms to guarantee citizens' access to the decision-making process. It should also openly solicit public views and attitudes and integrate these into its management program or procedures. Further, the state's program might include an ombudsman to hear, investigate, and act on, in a timely manner, the public's suggestions and complaints. Other possibilities might include regional centers to handle public inquiries and disseminate information; easily understood publications that deal with substantive issues and problems; easily-accessible sources of information; and informal education campaigns. A state must make the feedback system associated with public participation work if its management program is to keep current with changing needs and gain public acceptance. States need public support for their coastal zone management programs if they are to succeed. The inability of the general public, even of that of certain special interest groups, to communicate their views and have them considered in the planning and management processes has traditionally created much frustration and general mistrust of the regulatory agencies. Because many of the coastal zone management programs may infringe on the property rights of individual members of the public, the public should have a forum in which it could express its views and concerns. The "taking issue" discussed in Section III-A, Means of Exerting Control, could be an example of potential conflict between public and private interests. The most realistic way of attaining any degree of broad public support for a coastal zone management program is to provide for adequate and effective public participation (see also Chapter V, Public Participation).

Information and communication: Information needs and the communication of information to people who want or need it are multifaceted. Primary facets include compatibility of the existing body of information about the coastal zone with the management approaches the state has chosen; acquiring necessary information in a usable and understandable format; and establishing and maintaining a flow of information into, within, and from the management program for the wide variety of users who will seek this information. The impact of these three considerations on the state's organizational capability will depend on its perception of the value of each function and the level of funding necessary to achieve it. (See also discussion of information sources, systems and access in Chapter IV).

Program Costs: Another consideration is the sources of financial support for the management program. The state might use existing agencies' monitoring and policing capabilities for certain substate units, but even if a state allocates considerable authority and responsibilities to substate units, both state and substate governments will have some additional administrative costs. Another approach a state might consider is user charges, similar to those Michigan's "Truth in Pollution" legislation calls for.[7] Under this act, industrial water discharges are assessed a fee that partially covers the state's resources agency's monitoring costs.

Distributing these program-associated costs could be another problem. Unless a state carefully develops equitable distribution of costs, a disproportionate share of the burden could well fall on substate governments that could even less afford the financial costs than could the state. This is especially true in a state where criteria and standards are developed and then passed on to the local communities or counties for enforcement. In a case like this, a state might find it better to subsidize local regulatory activities rather than to create a new and different management structure. The combined questions of how much the management program would cost and who would pay for it are extremely important when the state considers the structure of its management program.

Program Flexibility: Inherent to any complex regulatory or management structure is the danger of losing sight of the goals and objectives which the program has adopted and the danger of becoming inflexible and insensitive to needs for change. With this in mind, a state might wish to include mechanisms in its management structure to try to avoid these potential problems.

The necessity for flexibility could arise in many situations: in establishing a way to keep the program current with attitudes and conditions; in establishing methods of dealing with extenuating circumstances (e.g., emergencies or disasters); in establishing processes for authorizing variances for nonconforming uses when such uses do not result in adverse impacts or do not compromise the programs goals and objectives; establishing criteria to permit expanding the list of permissible uses to include unanticipated uses (see Section II-B); in establishing criteria for realigning priorities to reflect changes in attitudes (see Section II-D); and in establishing criteria that allow modifying geographic areas of particular concern when changing conditions indicate this is necessary (see Section II-C). Each of these situations, as well as others that could emerge at any time, might warrant program changes, with or without additional legislation, but states should be careful to assure that those changes will result in more effective management programs.

4. Cooperative Mechanisms

The Act and Section 305 regulations specify that the state's lead agency and its associated organizational structure must coordinate and cooperate the state's

activities in two major areas:

- development of the management program must reflect coordination with existing local, substate regional, and multistate regional plans within the state's defined coastal zone;
- development of and strengthening of existing cooperative mechanisms for state-federal consultations in geographical areas of the coastal zone where there are key areas of mutual concern, particularly where federal activities affect or may potentially affect the coastal zone.

The state, as it develops the organization of its coastal zone management program, must coordinate its plans with existing plans of substate agencies; it must also provide effective mechanisms for continuing this coordination as the state's management program continues to operate.

Involving substate units of government in the organizational structure of the state's program may frequently require arrangements different from those necessary for coordinating and cooperating with agencies or units operating outside the formal management organization. For example, public health or safety agencies might not be a formal element of the state's coastal zone management organization; their activities and responsibilities, however, will directly influence the management function in several areas, among these, public beach regulation, law enforcement in coastal parks and campgrounds, and septic field permits for coastal residential development. The state's organizational implementing structure will probably not contain all of the state's resource-related functions and agencies; the state must therefore give special attention to those functions and agencies whose action can both influence and be influenced by the state's management program.

Agencies and other governmental units can have one of three arrangements with the state's coastal zone management program: first, formal linkages for example, the lead agency would have responsibility for coordinating coastal zone management activities of related agencies; second, informal linkages with communication exchange programs; or third, no linkages established. The king of relationships between the lead agency for the management program and other agencies can change over time--informal arrangements may become formal; formal, informal. Several factors might cause this: new legislative action; executive reorganization; constitutional amendment; or emergence of new and critical issues.

Needs for coordination: Many situations could arise where a state might design and implement resource management activities without appropriate coordination or recognition of other existing related plans or planning efforts. Examples might be state planning activities for development of offshore resource extraction allowed to evolve without recognition of, or coordination with, fishery management plans and programs, or a state might not coordinate an on-shore oil drilling operation fully with recreation and forest development proposals. This problem is partially alleviated now, at least when federal actions are involved, by the review process established under the National Environmental Policy Act.

In California, critics have charged that the state's Comprehensive Ocean Area Plan fails to consider adequately the plans and activities of other entities. The report Quiet Revolution in Land Use Control, cites many examples of the consequences of the lack of real coordination among resource agencies and groups.

States should consider the various levels of coordination that must evolve at the different levels of agencies' activities. These levels include: among state agencies; between state and local units; between local units; between state

and regional organizations; between and among states; and internationally.

A state must consult with those affected and coordinate its efforts when it becomes involved in displacement effects that an agency's or program's implementing policy causes. For example, resource development activities one agency's policies regulates or prohibits may merely displace those activities to another geographical area and cause conflicts with which other groups must deal. Some states are already experiencing displacement effects from their coastal zone management efforts. Issues related to power plant siting, refineries, offshore airports, and other development are being pushed inland by actions the states are taking to protect their coastal areas. These displacement actions may cause critical problems for programs and agencies with inland responsibilities.

Displacements from inland areas to the coastal zone might be the result of agencies' policies, if the agencies do not coordinate their activities and eradicate disparities in policies. For example, a state energy commission might receive a mandate to fulfill a quota of powerplants for the state which, without the necessary coordination with the state's coastal zone management program, might lead to non-optimum resource utilization. Unified statewide policies should reflect the goals and objectives of the coastal zone management program or other statewide policies should be coordinated with the coastal zone management program. See Section II-B, Permissible Uses, for additional discussion.

A recent harbor development controversy provides another illustration of the dangers of uncoordinated actions in the coastal zone. In Michigan, a state resource commission and the U.S. Army Corps of Engineers were considering the development of harbor improvements which reflected an anticipated demand for boat docking and harbor facilities; which was related to the sport fishery program of the State Fishery Division. The proposed program was not coordinated adequately with the plans of the National Park Service (charged with developing adjacent lands for a national park) or with the state's existing long-range coastal management objectives, which called for a policy of sponsoring only projects which do not have a significant impact on the coastal environment. The state's coastal resource objectives were never really related to the harbor development needs, and the harbor development project was ultimately defeated by the actions of local citizen groups who felt that the displacement effects of the harbor improvements would adversely affect them. The need for coordination can have international implications. For example, the proposed oil refinery in Eastport, Maine, might result in adverse economic and environmental impacts in the neighboring province of New Brunswick, Canada. In California, the restriction on coastal development, combined with the new highway in the Baja penninsula may be a major factor in a rapidly increasing influx of tourists and the related development to that area of Mexico, an increase with which the units of government there may be inadequately prepared to cope.

The displacement effect can, of course, occur between or among states. Chesapeake Bay is an example; here the policy established in one state may serve to displace a coastal issue or problem to a neighboring state. See Section II-A, Boundaries, for a discussion of this.

The need for coordination is also important in research support as a state develops its coastal zone management program. Coordinating research efforts can be extremely important in pooling research talent and data to attack a problem for which many agencies share responsibility and can frequently result in more effective investigation and resolution of that problem.

The state's coastal zone management organization could identify the many research needs for issues involving coastal resource development or protection. The lead coastal zone agency, or any other chosen agency, could then coordinate

with those who have the research expertise, among these, universities and other state agencies--to link research programs that could help resolve the various issues.

In the harbor improvement example above, if the state had begun in the early phase of sports fishery development and coordinated this program with a study of the recreational access needs, this might have helped to avoid the confrontation and subsequent defeat of the proposal.

As it considers cooperative arrangements between and among the coastal management agency and other agencies and units at all levels the state should also examine the problem of overlapping or mismatched standards and regulations. Consider the example of a coastal zone management agency responsible for controlling the loss of sediment supply from a littoral system which maintains beach areas. Existing water resources agency practices or regulations may deal with the sediment from the perspective of upstream impoundment problems. The coastal agency might want to impose different standards on sediment control and dam construction because of its interest in maintaining beaches or protecting estuaries. States should develop interagency communication and coordination to the point where resource management approaches that are at cross-purposes, such as these, can be resolved.

Continuing Coordination: The requirement for continued coordination of the state's coastal zone management program with existing plans and with local, regional, and other appropriate agencies will have considerable influence on how a state organizes the structure to implement its management plan. For example, a state may find that to ensure continued coordination with these other agencies, it may have to incorporate formal mechanisms for coordination within its coastal zone management structure. These arrangements might include establishing advisory or review boards which include affected agencies; it might involve regular reviews or hearings of the management program with local, regional, and interstate groups.

A state might establish advisory boards at various levels, or it might choose to deal functionally with certain areas of activity in coastal zone management:

- local government advisory boards, the objective of which would be to give local units an opportunity to comment on a regular and continuing basis on how the state's management program was working. Geography could be one basis for these boards' membership.
- state agency or regional planning advisory boards, the objective of which would be to deal with mutual policy issues; and
- coastal research advisory boards, to bring together research personnel from those agencies and organizations involved in research related to coastal issues or problems.

The lead agency might also further interagency communication and coordination through newsletters and activity reports. If these are done properly, they could be highly effective alerting local governments and state agencies to the issues and problems with which each agency involved in the coastal zone management program is dealing.

Other techniques to use to increase coordination include: distributing working drafts of progress reports and research studies; holding formal or informal meetings on specific program elements; creating a formal agency liaison to work with other units to promote interagency communication; and using task force groups to examine specific issues and/or problems.

The Office of Coastal Zone Management will provide guidance through the Section 306 regulations as to the federal requirements for mechanisms to assure adequate consultation and coordination with other entities at all levels. Each state must

establish procedures which show its intention to pursue this requirement of the Act. Establishing various advisory boards or committees could be one way a state could show the extent of its commitment toward this end.

CITATIONS

1. Earl H. Bradley, Jr. and John M. Armstrong: A Description and Analysis of Coastal Zone and Shoreline Management Programs in the United States, University of Michigan Sea Grant Program, 1971.
2. Executive Order of Governor Francis W. Sargent adopted in 1972.
3. Elizabeth P. Haskell: Managing the Environment: Nine States Look for New Answers, Smithsonian Institution, 1971.
4. Fred P. Bossleman and Richard Babcock: The Quiet Revolution in Land Use Control, U.S. Government Printing Office, 1971.
5. Bradley and Armstrong: op. cit.
6. Peter M. Douglas, "Coastal Zone Management--A New Approach", Coastal Zone Management Journal, 1(1), 1973.
7. Michigan Public Act 200 of 1970 as modified by Public Act 293 of 1972.

C. Cooperation and Coordination with Federal Agencies

1. Coordination Before Federal Approval

While there are numerous references in the Act to state-federal cooperation, consultation, participation, and adequate consideration of federal agency views, this section deals primarily with Section 307 of the Act and with Sections 920.3 and 920.10(c) of the Section 305 regulations. The overall issue of state-federal interaction will be addressed in greater detail in a document the Office of Coastal Zone Management is to publish shortly.

States should consider coordination with federal agencies as occurring in two separate phases: first, that which states will need while they are developing their coastal zone management programs; and second, that which they will require once the Secretary of Commerce has approved their management programs. Section 307(b) addresses the need for preapproval coordination:

> The Secretary shall not approve the management program submitted by a state pursuant to Section 306 unless the views of Federal agencies principally affected by such programs have been adequately considered.

Sections 307(c) and (d) address the requirements for coordination which must be met after the Secretary has approved a state's coastal zone managment program.

Before the Secretary approves a state's program, there will be at least two stages for federal agency involvement in and review of the program. The first federal agency involvement would occur while the state is developing its coastal zone management program. The second would occur when the state submits its management program to the Secretary for approval. At that time the Secretary would be responsible for further review and coordination among federal agencies.

It is necessary to identify which federal agencies should be considered to be "principally affected" by a state's management program. This depends upon the key issues within that state. For example, an extensive water transportation industry and flood control problem makes the Corps of Engineers a key agency in Louisiana. (For a representative listing of key federal agencies refer to the Appendix.) To be sure it has considered all relevant federal agencies, a state should examine its coastal zone to determine which federal agencies have lands or substantial investments within that coastal zone. (Federal lands are excluded from the state's coastal zones by law, but coordination with federal agencies administering excluded federal lands is necessary, since administration of these should be consistent with the states' approved management programs.) An index which lists coastal issues and subjects with relevant federal agencies may help a state identify the federal agencies with which it should coordinate its program.

A state may wish to develop certain coordination and review mechanisms and procedures to ensure that federal agencies have an opportunity to review its coastal zone management program and respond to it. Some traditional mechanisms and procedures a state might use include:

- interagency task forces, members of which include federal officials, to review and to comment on portions of the state's coastal zone management program (this task force could be a working group, or a review or advisory board);
- hearings, at which federal agency representatives could observe and comment on the coastal zone management program (see Chapter V, Public Participation);
- progress reports, which a state would issue periodically, could provide federal agencies opportunities to review and to comment;

. newsletters, which a state would send out regularly could be a means of describing milestones achieved in the program's development; and
. liaison personnel, who report on progress in the coastal zone management program's development and receive views and comments for the state's consideration (these people could be state or federal officials).

In some cases locally-based federal agents have views which differ from those their regional or Washington offices hold. A state which wishes to take a more cautious approach should involve all three levels of federal agencies in its management program review process. A state should also check to see if it has more than one office of a federal agency within its coastal zone. California, for example, has three Corps of Engineers districts within the state.

Several mechanisms exist in the federal government which might help a state in this consultation and review process. The federal executive boards located in numerous cities throughout the country could help ensure adequate federal agency review. Another mechanism would be the Federal Regional Councils, which are designed to provide a uniform federal response to problems of state and local government; especially where funds for particular activities or other forms of technical assistance and support come from more than one source.

During this preapproval review process, a state may clash with federal agencies over coastal resource management policy. Section 307(b) provides

> In case of serious disagreement between any Federal agency and the state in the development of the program the Secretary in cooperation with the Executive Office of the President shall seek to mediate the differences.

What are some potential "serious disagreements"? One example might be the National Park Service which administers the Cape Cod National Seashore. NPS is considering a policy against building further shore protection structures. Failure to build shore protection structures here, however, could harm Pleasant Bay to the south--a highly productive estuary--because water circulation would be cut off once increased sedimentation closes the mouth of the Bay. If Massachusetts chooses to emphasize the protection of Pleasant Bay as part of its coastal zone management program, "serious disagreement" between the state and the NPS may be the result.

Another example could be in Louisiana, where the Bureau of Sport Fisheries and Wild Life, Department of Interior reviews all applications to the Corps of Engineers for dredge and fill in coastal areas. In Louisiana, dredging in the estuarine zone is common and has been occurring for thirty years in waters less deep than the minimum recommended under informal guidelines from Bureau of Sport Fisheries and Wildlife. If Louisiana's coastal zone management program wishes to allow dredging in the coastal zone in its more shallow waters, with prescribed safeguards, again "serious disagreement" between the state and the federal agency may result.

Because frequently federal agency standards and policies are still being debated and tested, state views regarding those policies are relevant and timely. Instead of "serious disagreement," perhaps a reconciliation could result. In the Massachusetts and Louisiana examples, both sets of federal policies are tentative and are still being tested.

In the selection of sites for ocean dumping, a program the Environmental Protection Agency administers, the federal guidelines on how to choose sites are still being debated. As states develop their coastal zone management programs, they are in ideal positions to influence the development of federal

policies as those policies would affect states' coastal zones. Federal agencies may welcome this interaction in formulating and revising of their policies since it could save them from serious conflicts with state officials and politicians should policies differ.

But despite federal and state efforts to reconcile differences, serious disagreements could still result. The Act provides for the Secretary to develop a mediation process. The Secretary may promulgate specific procedures regarding this mediation process. Should he do so, states might well be responsible for initiating the procedures to try to resolve a particular conflict.[1,2]

If mediation should fail the courts may have to resolve the conflict. Conflicts might arise only after the Secretary approved a management program, not before, because only after the Secretary has approved a state's program is it necessary to invoke the provision of section 307(c) which requires federal agency consistency with approved state programs. A variety of problems will have to be addressed concerning the consistency issue; among these,

- Must conflicting state laws yield to federal laws even if the state laws were enacted pursuant to the federal Coastal Zone Management Act and approved by the Secretary of Commerce?
- How are conflicting policies of a federal agency and a state's approved coastal management program to be reconciled?
- How much weight is to be given the "non-derogation" clause of the Act (307 (e)) when comparing approved coastal zone management programs with conflicting policies of other agencies?
- Since federal agencies are to make their activities consistent with approved coastal management programs, in any given case, how is it determined that the required consistency has been met?

To avoid the need to invoke the mediation procedures, or to await a final judicial determination of a disagreement, a state should make every effort to notify federal agencies of proposed coastal management policies so that objections and possible serious disagreements emerge early in the planning process. It may not be wise for a state to assume that a federal agency will not object to approval of a state's management program because of that agency's failure to object during the program development period.

Congress is always passing new laws and states will also have to address how new programs and policies are to be reflected in or coordinated with approved coastal management programs. At this writing, Congress is considering or has passed legislation on deepwater ports, power plant siting, beach access, and beach erosion. The fate of comprehensive land use planning seems uncertain. A state should address specifically how these new programs relate to the coastal zone management program for which it will seek approval.[1]

2. Required Consistency, Certification, and Complementarity

We have been addressing coordination between the state and federal agencies before the Secretary approves the state's program and the possible forms of mediation and litigation should other procedures fail to resolve all disagreements.

Once the Secretary approves a coastal management program, what requirements do government agencies and private persons have to meet to conform their actions to the management program? Section 307 specifically addresses this question--for federal agencies (307(c)(1 and 2)); applicants for federal licenses and permits (307(c)(3)); and for state and local governments

307(d)). Section 307 also addresses how a state's coastal management programs must relate to air and water quality laws (307(f)), proposed land use laws (307(g)), and other federal laws and programs (307(e)). Section 305 regulations address requirements a state must meet under the National Environmental Policy Act as it prepares environmental impact statements (920.10(c)). We will discuss each of these required relationships separately.

Federal agencies' responsibilities: After the Secretary has approved a state's management program, each federal agency conducting, or supporting, or undertaking activities directly affecting the coastal zone shall do so in a manner which is, as much as possible, consistent with the approved state management programs.

Activities a federal agency might conduct could include those in which federal employees are directly involved in functional duties in the state. Corps of Engineers' flood protection programs require direct action by Corps staff using Corps equipment. Similarly, the National Park Service is directly involved in functional activities in states where a national seashore or national park is in the coastal zone.

Activities a federal agency supports include those activities it funds or provides facilities or personnel for. Two examples are small watershed projects in the coastal zone which the Soil Conservation Service sponsors and planning projects Water Resources Council programs fund.

Development projects a federal agency might undertake include construction for military installations, federal office buildings, federal parks or monuments, and perhaps, in some cases, airports. One might also include construction of access ramps to federally controlled spillways or reservoirs, even though these are to aid recreation. Water resource projects, of which flooding of large areas of wetlands to provide habitats for waterfowl is an example, could be considered a development project--developing wildfowl resources.

It is important, however, to note that the activities a federal agency conducts or supports must "directly affect" the state's coastal zone before the federal agency is required to coordinate its effort with the state's program. But under the terms of the Act, it does appear that nearly every federal activity is to consistent, to the maximum extent practicable, with a state's coastal zone management program.

States and federal agencies must therefore interpret, for each case, the meaning of "to the maximum extent practicable." At the least, "maximum effort" and "practical" seem to imply a responsibility for cooperation. Whether there is a further responsibility to change a program is debatable.

For example, a federal agency might cooperate fully to the extent their finances and authority would permit, but it would not take any steps to reallocate funds, request more funds, or suggest a change in authorization. Shortly after regulations under the Act were promulgated, the Corps of Engineers, in its new regulations for structures permits in navigable waters, referred to the Coastal Zone Management Act and acknowledged the need for compatibility between a proposed action the Corps of Engineers might license and an approved coastal management program in the state in which the action would occur[3]. The Council on Environmental Quality and the Water Resources Council have done the same[4,5].

States might study the 1972 Federal Water Pollution Control Act in which the best "practicable" technology for controlling water pollution is required by 1977[6]. How "practicable" is interpreted here might help states define it for purposes of coastal zone management.

Federal agencies should address the question of "maximum extent practicable"

when they review a state's proposed coastal zone management program. If they gave the program an intensive and detailed review process before the Secretary approves it, this might resolve many potential difficulties in coordinating federal and state activities in a particular state's coastal zone.

Both states and federal agencies should remember that most activities involving federal agencies have a local component to them. This component could be an interest group or a state or local agency which encourages the federal program. To help avoid conflicts between federal programs and state actions, state and local components should try to examine potentially contentious subjects before federal agencies become involved. For example, debates over watershed projects between the Soil Conservation Service and the Bureau of Sport Fisheries and Wildlife will first arise between local "cooperators" of the Soil Conservation Service system (farmers) and sportsmen or fishermen. Presumably, if the matter can be resolved locally, potentially greater federal agency involvement will diminish or not arise.

License and permit consistency: Once a state has an approved management program, applicants for a federal license or permit to conduct an activity affecting land or water uses in its coastal zone

> shall provide in the application to the licensing or permitting agency a certification that the proposed activity complies with the state's approved program and that such activity will be conducted in a manner consistent with the program. At the same time, the applicant shall furnish to the state or its designated agency a copy of the certification with all necessary information and data. Each coastal state shall establish procedures for public notices in the case of all such certifications and to the extent it deems appropriate, procedures for public hearings in the connection therewith. At the earliest practicable time, the state or its designated agency shall notify the Federal agency concerned that the state concurs with or objects to the applicant's certification. If the state or its designated agency fails to furnish the required notification within six months after receipt of its copy of the applicant's certification, the state's concurrence with the certification shall be conclusively presumed. No license or permit shall be granted by the Federal agency until the state or its designated agency has concurred with the applicant's certification or until, by the state's failure to act, the concurrence is conclusively presumed, unless the Secretary, on his own initiative or upon appeal by the applicant, finds, after providing a reasonable opportunity for detailed comments from the Federal Agency involved and from the state, that the activity isconsistent with the objectives of this title or is otherwise necessary in the interest of national security.

The following hypothetical case explains how this provision in the Act (307(c)(3)) operates:

- KenPen Construction Company applies to the Army Corps of Engineers to fill in five acres of Coastal Bay for a condominium/parking lot/swimming pool development.
- KenPen supplies the Corps of Engineers with all necessary information regarding engineering, required authorizations, and necessary approvals from local and state agencies in accordance with local Corps of Engineers' policy.

- In addition to this information, KenPen provides an additional document, called a "certification," stating that KenPen's activities would comply with the state's approved coastal management program and would be conducted in a manner consistent with that program.
- KenPen sends a copy of the certification to the state agency the Governor has designated to administer the state's coastal zone management program.
- This state agency gives public notice that the certification has been received, holds hearings if it deems them necessary, and, as soon as possible, indicates to the Corps of Engineers that the state accepts, with or without conditions, or rejects the certification provided. If the state agency does not act within six months after it receives the certification, the Corps of Engineers may presume that the agency accepts the certification.
- The Corps of Engineers may not grant the permit to KenPen unless the state accepts the certification--whether that acceptance is actual or presumed.
- If the state objects to the certification, and KenPen Construction disagrees with this objection, KenPen may appeal directly to the Secretary of Commerce. The Secretary of Commerce, on his own initiative, could call the case up before him. The Secretary would receive detailed comments from the Corps of Engineers and from the state agency. He would then decide whether the activity would be consistent with the Act's objectives or otherwise necessary in the interests of national security.
- A state should develop a list of the appropriate federal licensing procedures where this certification procedure would operate, and it may wish to develop a set of rules to deal with the certification process. For example, the rules might address the question of to whom a certification is sent, the type of data and information that should be attached to the certification (this will vary with the kind of federal permit or license being applied for), the procedures for notices to other state agencies, local governments and the public once the certification is received, what conditions would require a public hearing upon a certification, and other considerations.

The state has the responsibility to object to a certification. This implies that business will go on as usual unless state agencies charged with administering a coastal zone management program have the time and money to investigate certifications and object where they feel it is necessary. For this reason, a state may wish to include in its management program a review process over related federal licensing procedures, and it should budget personnel and funds for this.

States may wish to review the certification procedures under other statutes (for example, the federal Water Pollution Control Act) for possible adoption for coastal zone management. Established state agency review processes could also be useful in this context.

Consistency in state and local government applications for federal assistance: State and local governments, as well as federal agencies and applicants for federal licenses or permits, must make their proposals consistent with a state's approved management program. Section 307(d) provides

> State and local governments submitting applications for Federal assistance under other Federal programs affecting the coastal zone shall indicate the views of the appropriate state or local agency as to the relationship of such activities to the approved management program for the coastal zone. Such applications shall be

> submitted and coordinated in accordance with the provisions of title IV of the Intergovernmental Coordination Act of 1968 (82 Stat. 1093). Federal agencies shall not approve proposed projects that are inconsistent with a coastal state's management program, except upon a finding by the Secretary that such project is consistent with the purposes of this title or necessary in the interest of national security.

States must create a procedure for other agencies of state government and for regional and local governments through which these groups can interact and coordinate their activities with the approved management program. Through the Intergovernmental Coordination Act of 1968, implemented by OMB Circular A-95, all states have a procedure for circulating and reviewing applications for federal funds. A state should use the current review process and identify ways in which the coastal zone management program fits into that system.

It is possible that the federal agency reviewing an assistance proposal from a state or local agency and the state agency administering the approved management program could both establish procedures to determine if a proposal for assistance is consistent with the state's program. A coastal municipality applying to a federal agency for funds to construct a facility would need to include in the application the views of the state's management agency about the relationship of the facility to the state's coastal zone management program. The coastal municipality and the management agency may disagree over the location of the facility, for example. One interpretation of Section 307(d) is that the federal agency may not approve the application if the state coastal zone management agency has found the application to be inconsistent with the state's approved management program. Another interpretation is that the federal agency must determine if the application is consistent with the state's approved program. The Secretary of Commerce could be asked to resolve the matter under procedures for appeals to the Secretary.

Consistency with water and air quality programs: By law, state coastal management programs may not create water pollution or air pollution control requirements which differ from those already required under federal laws and programs:

> Notwithstanding any other provision of this title, nothing in this title shall in any way affect any requirement (1) established by the Federal Water Pollution Control Act, as amended, or the Clean Air Act, as amended, or (2) established by the Federal Government or by any state or local government pursuant to such Acts. Such requirements shall be incorporated in any program developed pursuant to this title and shall be the water pollution control and air pollution control requirements applicable to such programs. (307(f)).

A state must consider the question of the relationship of coastal zone management programs with other federal water and air programs. A state might wish to approach the problem by first identifying what water and air use requirements are important for its management program as the program develops. Once it has identified these elements of control, the management agency might wish to consult with state and federal officials regarding the capability of other federal laws and programs to handle these problems. If any other of the programs could handle a particular problem, the management agency could consider referring to it; if not, the state could deal with it in the coastal zone management program.

It is well to remember that a considerable difference can exist between what is supposed to be covered under a major comprehensive federal act like the Federal Water Pollution Control Act and what is actually being done.

EPA officals have acknowledged publicly that they must assign priorities. They are not dealing with some problems the law requires they handle because they have inadequate personnel and budget. A state's coastal zone management program may be useful as a vehicle to assist fuller coverage of problems under the Water Quality or Clean Air Acts where federal agencies are not properly staffed to handle them.

There are two areas where existing federal water and air programs have a significant effect on a state's coastal zone management program. Under the Clean Air Act, the "clustering" of new emission sources can be controlled in the interest of ensuring clean air. This is a land use control. Under the Water Pollution Control Act Amendments of 1972, "basin" and "areawide" plans are to be promulgated so that decisions regarding the necessary sewage treatment for municipalities within the basin can be assessed in terms of total waste discharge and applicable water quality standards. These plans involve land use decisions since the size, spacing and capacity of sewage treatment facilities are involved.

The Louisiana-Mississippi River Corridor provides a good example of how Louisiana's coastal zone management program will have to consider EPA requirements under both the Clean Air Act and the Water Pollution Control Act. As an example, under the EPA program, "clustering" of commercial and industrial facilities may be discouraged in the interest of air quality. On the other hand, Louisiana might decide, through its coastal zone management program, that the wetlands of the state are too valuable to allow industrial development anywhere but the Mississippi River Corridor. In this case, the state's management agency would have to work closely with those federal and state officials concerned with clean air requirements. Louisiana would have the same problem regarding the basin plan requirements for sewage treatment plants. Louisiana is a major oyster producing state; oysters are significant industry in the coastal area. To protect that industry and the water quality where oysters grow, the state management program might consider that higher treatment standards for sewage treatment plants are necessary. A decision like this would require close coordination with the state's water pollution control offices.

Consistency with land use programs: Congress foresaw that coastal zone management and land use programs would have to coexist. Because both programs might be required to deal with certain issues, Congress added section 307(g) to resolve potential jurisdiction overlaps:

> When any state's coastal zone management program submitted for approval or proposed for modification pursuant to section 306 of this title, includes requirements as to shorelands which also would be subject to any Federally supported national land use program which may be hereafter enacted, the Secretary, prior to approving such a program, shall obtain the concurrence of the Secretary of the Interior, or any such other Federal official as may be designated to administer the national land use program with respect to that portion of the coastal zone management program affecting such inland areas.

The land use bills the House and Senate have considered recognize the existence of two separate programs and provide for coordinating the two so that jurisdiction between the programs within each state is clear, and funds are so apportioned that they reflect the relative sizes of coastal and non-coastal areas within states.

Regardless of the language in the Coastal Zone Management Act and of whatever--if any--land use law comes out of Congress, the burden of coordinating

the two programs rests with the officials administering them within a state. The inland boundary of the coastal zone must reflect both the dividing line between coastal and non-coastal features and the respective jurisdictions of the two programs. The question of agency responsibility within a state can determine the ease or difficulty of coordinating the two programs. A single planning agency overseeing the planning efforts of both programs could facilitate ultimate coordination of both management programs. However, many states would find it just as logical to assign coastal planning and management to marine-oriented agencies and leave land use planning to agencies concerned with general state planning problems.

Because these two programs--coastal zone management and land use planning--are so closely linked and because the potential for overlap is so real, states may determine it necessary to establish clear guidelines that outline each program's respective role. This will occur, almost certainly, at the federal level. State and local governments should consider it seriously as well.

Non-derogation clauses: Congress included clauses (307(e)(1 and 2)) in the Act to prevent a state's coastal zone management program from stepping too hard upon the toes of related federal laws and programs:

> (e) Nothing in this title shall be construed--
>
> (1) to diminish either Federal or state jurisdiction, responsibility, or rights in the field of planning, development, or control of water resources, submerged lands, or navigable waters; nor to displace, supersede, limit, or modify any interstate compact or the jurisdiction or responsibility of any legally established joint or common agency of two or more states and the Federal Government; nor to limit the authority of Congress to authorize and fund projects;
>
> (2) as superseding, modifying, or repealing existing laws applicable to the various Federal agencies; nor to affect the jurisdiction, powers, or prerogatives of the International Joint Commission, United States and Canada, the Permanent Engineering Board, and the United States operating entity or entitles established pursuant to the Columbia River Basin Treaty, signed at Washington, January 17, 1961, or the International Boundary and Water Commission, United States and Mexico.

This provision, commonly called the "non-derogation" clause, makes clear that the Act does not diminish other federal or state laws.

The first subsection of this provision seems to be directly aimed at the programs administered through the Water Resources Council, other water-related programs created by interstate compact and by Congress, and programs the Corps of Engineers adminsters after special authorization from Congress. These programs have a critical effect on coastal regions, and a state should pay special attention to them as it develops its coastal zone management program. Three examples below indicate how states can combine other efforts with coastal zone management to enhance the effectiveness of both:

- The Delaware River Basin Commission, which includes the states of New York, New Jersey, Pennsylvania and Delaware, has developed many plans for the basin and is involved in the decision-making process for uses of the basin. The Commission works closely with water quality offices and the Corps of Engineers. The Commission will presumably participate in making management decisions affecting the Lower Delaware Bay.
- The Great Lakes Basin Commission's framework study deals extensively with shoreline erosion problems. The Commission views coastal zone management as a mechanism for expanding the study into other management issues--among

these, how to control the shoreline development which magnifies and heightens the erosion problem.

. The New England River Basins Commission (NERBC) is completing three studies: The Connecticut River Study, the Long Island Sound Study and the Southeastern New England Study. NERBC has been encouraging close cooperation among the three studies and coastal zone management studies because the objectives of the two efforts dovetail.

Should conflict arise between coastal management programs and other federal or state programs, the chief administrator or each of the programs, or the President (through his executive offices), must resolve these. The courts can help by interpreting the meaning of the laws. Congress intended, by including interagency coordination and cooperation provisions, to create procedures that would avoid confrontations among related federal programs.

Relationship to the National Environmental Policy Act: One final area in which a state must clarify its position is its management program's relationship to the National Environmental Policy Act. The section 305 regulations address this question (Section 920.10(c)):

> It is anticipated that an environmental impact statement will be prepared and circulated on a State's management program prior to its approval by the Secretary of Commerce, in accordance with the terms of the National Environmental Policy Act and its associated adminstrative regulations. The Secretary will prepare and circulate an environmental impact statement on the basis of an environmental impact assessment and other relevant data, prepared and submitted by the individual States.

A state must consider the procedures and requirements for preparing environmental impact statements while it is developing its coastal zone management program. It will need to submit impact assessment information and data to the Secretary before he approves its program. The state should develop an impact assessment process as part of its definition of permissible uses; in doing so, it should consider other impact assessment techniques, for example, those required under the NEPA rules and regulations. The Water Resources Council guidelines on planning water and related land resource projects[5] would also help a state develop its impact assessment procedures.

Once a state has a management program, many projects to be reviewed as part of it will also require environmental impact statements or analysis under Water Resources Council guidelines. A state could therefore save time and money by including similar elements in its various assessment processes.

Both the Council for Environmental Quality guidelines for writing impact statements and the WRC guidelines for planning water and related land resource projects require that the federal agent responsible for a project coordinate project plans with those in states involved that are preparing or administering coastal zone management programs. This provides a good opportunity for federal and state planners and impact assessors to compare the techniques each is developing and to simplify the overall process by using common terms and values wherever possible.

The demands for coordination and cooperation in modern resource management laws and the overwhelming number of agencies and programs concerned with resources in the coastal zone make the coordination task extremely challenging. Some think it is impossible to meet and to talk with all of the people concerned.

Perhaps two fundamental considerations can assist in the coordination process: First, the planning system it develops and adopts should be an open

one, encouraging any interested people to become involved, whether these represent a governmental agency or a private interest. A state should not preclude or inhibit anyone interested in effecting the coordination from doing so. Second, in establishing the planning process, a state should make explicit a mechanism through which interested agencies can respond to proposed plans.

CITATIONS

1. Marc Hershman and John Folkenroth, "Coastal Zone Management and Intergovernmental Coordination," Oregon Law Review, Summer 1974.

2. Harold Wise, David Hartley, and John Bosley, "State-Federal Relations in the Coastal Zone Management Program," working paper prepared for the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, March 1974.

3. Corps of Engineers, Department of the Army, "Permits for Activities in Navigable Waters or Ocean Waters," 39 Fed. Reg. 12115, April 3, 1974.

4. Council on Environmental Quality, "Preparation of Environmental Impact Statements: Guidelines," 38 Fed. Reg. 20550, August 1, 1973.

5. Water Resources Council, "Principles and Standards for Planning Water and Related Land Resources," 38 Fed. Reg. 24778, September 10, 1973.

6. Federal Water Pollution Control Act Amendments of 1972, P.L. 92-500, §301, 1972.

CHAPTER IV

ORGANIZATION AND USE OF INFORMATION

1. Introduction

This chapter is divided into the following parts:

- Problems regarding the use of information in management programs;
- Types of information programs;
- Considerations in designing an information program;
- Knowledge of existing information; and
- Improving information access.

The first three parts deal with general problems and considerations in information program design. The fourth part categorizes and provides specific examples of information services relevant to coastal zone management. The final part discusses means of obtaining access to pertinent types of information, particularly through establishing a clearinghouse function.

2. Problems Regarding the Use of Information in Management Programs

In developing research and technical information programs, state agencies should first have a clear understanding of their own needs as well as considering the problems which are inherent in the design and operation of information systems. Although in most cases, the solutions discussed are only partial, the cost of ignoring them may be extremely high.

Simplification of scientific knowledge: It will never be possible to prove that unspecified variables are not operating, or that "unknown forces" are not leading the observer to believe that a causal relationship exists when in fact it does not. Therefore, simplifying assumptions of possible disturbing influences and variables are necessary. Furthermore, there is no way of being certain that all relevant variables have been included in a causal model or explanation of that the variables which are used are the most appropriate ones. These dilemas are apparently insoluble and require a kind of faith that the assumptions made are sound.

Information sufficiency: The information available to decision-makers is seldom sufficient. Even the simplest decisions generate consequences which, in combination with the consequences of other decisions and events, will often proliferate endlessly. Decision-makers, therefore, must accept a degree of uncertainty. They may be able to reduce the level of uncertainty or mitigate its effects, but if the cost of doing so is excessive or if circumstances necessitate immediate decisions, there is no alternative but to act on the "best possible" analysis of the available information.

Cost of acquiring data: Much of the data state agencies will require is either presently unavailable or difficult to obtain; thus requiring costly programs. A notable example is the University of Texas' Bureau of Economic Geology study. This study mapped composite environmental factors for an 18,000 square mile area at a unit cost of $20.00 or $360,000 and published them in an Environmental Geologic Atlas series. If administrative costs had been included in the calculations--as would be necessary if an outside consultant had conducted the research--the cost might at least have doubled.[1]

As in the Texas case, information on fragile coastal environments, shoreline recreational demand, or any number of other topics relevant to the planning efforts required in the formulation of a coastal zone management program will often require original research--without the benefit of building on what was done previously. Coastal zone authorities, however, will need to consider whether the marginal costs of developing new information is worth the benefits resulting

from the additional information. It is important for states to recognize that time delays in collecting, processing, or delivering information may add substantially to the purchase price. Furthermore, the cost of processing the data itself can be considerable.

Coastal zone authorities should recognize that any actual expenditure of funds, for information or anything else, has what economists refer to as an "opportunity cost". The funds spent to collect or manipulate data might better be spent on something else--such as review of proposed projects--from which greater benefits would have derived. This is a particularly important point here due to the expense of gathering and processing data. The Section 305 regulations (920.20 (d)) stipulate that:

> the primary emphasis of the coastal zone management program is to create the mechanism for states to exert appropriate control over land and water uses and to begin the management process, not to engage in long-term research projects. (920.20(d))

Data/model fit: One of the most troubling and persistent problems in information system design is data/model misfit. There is no point in collecting extremely detailed and sophisticated information if there are no, or only a very crude, explanatory and predictive systems in which to use it. Conversely, and perhaps more typically, there is no justification for designing complex models when the only data available to feed them are of poor and uneven quality. A sophisticated model operating on unreliable data will simply compound the original measurement errors, sometimes "explosively"--as in the case of models which raise variables to powers. Therefore, the quality of the model should correspond to the quality of the data it uses--and vice versa.

Value of information: All information is value-laden. There are various ways, for example, to measure the success of a coastal recreation area: number of visitors per day, user satisfaction surveys, public willingness to pay for the use of the facility, and others. The answer to the question of which of these is most useful depends to a large extent on what, precisely, the decision-maker considers a successful recreation area to be. The meaning of successful, in turn, depends on the person's own values--training, experience, and beliefs. Thus, the groups of variables employed to determine the adequacy of coastal recreation facilities, however rigorously measured, will include a subjective element.

Moreover, the interpretation of "facts" is notoriously susceptible to value distortions. Two observers may agree about what an object is and that it has value, but still disagree on the nature of its value due to their assumptions about how value should be measured.

The fact that information and information processing is always value-laden does not necessarily mean that it is impossible to use it meaningfully; it does mean, however, that coastal zone authorities should exercise caution and discretion in selecting data sources and processing techniques and try to limit the extent and degree of bias in information systems.

Understanding between users and producers of information: In technologically advanced societies, information is a fundamentally important commodity. Like other goods, it is produced, bought, and sold--sometimes in a form that is useless to the purchasers. This problem seems to be widespread in the area of environmental affairs.

It has been pointed out that many research results are difficult to use because:[3]

. The results are often too specialized for use in complex decision-making situations;

- the results include variables which are not directly pertinent to the needs of decision-makers;
- the research results are rarely "future oriented"; and
- the results are often obscurely presented in jargon which limits its usefulness.

Decision-makers, on the other hand, have often failed to make the best use of available research; often, they rely on their own perceptions, practial experience, or common sense, possibly due to their lack of confidence or mistrust of and non-training in the complex study techniques associated with quantitative or qualitative analysis. These points raise what might develop as a recurrent dilemma for the state coastal zone authorities--scientific research is not necessarily or even ordinarily addressed to issues and problems with which decision-makers must deal. When research on a given situation is available, it is often difficult to locate or apply. Towards this end the Section 305 regulations recommend that:

> States should review and develop explicit statements of their research needs and strengthen their contacts and involvement with the private and public research community, by taking a lead role in determining research and technical priorities, continuing mutual project development activities and translation of scientific findings into information useful for managers. (920.21(i))

A number of states and regions have developed comprehensive statements of their applied research needs for coastal zone management[4,5,6]. Once the applied research efforts are initiated, the management authority should maintain close contact with the researchers; particularly to assure that the research program is carried out as originally intended.

Proliferation of information: Information is currently proliferating at an exponential rate which creates two problems for the design of information systems. It is extremely difficult to anticipate: first, where or in what form the necessary information exists; and second, when and from what sources new relevant information may become available. The Federal Office of Coastal Zone Management, with the assistance of the Environmental Data Service will

> ...endeavor to serve generally as a clearinghouse for specialized coastal zone technical information, and will issue pertinent publications and appropriate technical support available at least from federal sources (920.20(b)).

The information explosion has two consequences of importance to the design of information systems:

- Information does not normally accumulate in an orderly, systematic fashion. Typically, data about specific scientific subjects is scattered throughout a variety of publications including professional journals, monographs, technical reports, seminar proceedings. Some of the data is unpublished in the general sense of the word--as theses and dissertations associated with advance degrees. Some data may appear in foreign language publications, or in periodicals addressed to a limited and highly specialized audience. For these reasons, it will be helpful for coastal zone authorities to foster and maintain contacts with academic and commercial research communities.
- It will often be difficult for coastal zone authorities to know the effective life of the data with which they are working. For example, apparently reliable information about some aspect of estuarine ecology may be superceded by new research whose results were impossible to anticipate or unavailable at the time the program development is initiated. States should keep their program development efforts as flexible as possible in order to accommodate new inform-

ation as it becomes available.

Information stability: Some types of information are less stable or inherently harder to evaluate than others. For example, attitudes toward environmental quality and resource use have changed, drastically and unexpectedly in some cases, over the last ten years. It is unlikely that data collected before the last decade would have revealed the incipient public interest in and concern with environmental quality.

3. Types of Information Programs

Information systems used for planning can generally be classified as one of two types:

- those which collect and provide specific, limited issue or problem-oriented information (hereinafter referred to as "POIP"); and
- those which collect and disseminate information on a continuing and comprehensive basis (hereinafter referred to as "CONCOMP").

In many cases it is difficult to make a distinction between the two types of systems; however each type is appropriate to a different range of decision-making contexts. For example, the system adopted by the U.S. Bureau of Census is a CONCOMP and although there have been numerous internal changes in the data reporting and accounting systems; the Bureau has continuously accumulated information in a broad variety of categories--generally trying to comprehensively describe the U.S. population in terms of demographic, housing, and economic variables. Much of the data is useful in problem-solving situations, but it is not collected to serve any specific short-term effort. POIP systems, on the other hand, are typically established to cope with particular, often "one-shot", problems. Information is not catalogued in standardized categories and formats over long periods of time; but rather, in whatever fashion seems most useful to deal with the problem at hand. In one instance of recreation research, for example, attitudinal measures (e.g., polls) might be used; in another, behavioral indicators might produce more useful information. The POIP system is based on the assumption that each planning problem is essentially unique and until a problem is defined it is impossible to know what information to collect in order to solve it.

The CONCOMP system, in contrast, assumes that problems have enough generic similarities so that they can be grouped and information categories or classes constructed for them in advance of a specific need to solve the problem. Neither a pure POIP or CONCOMP system will probably be adequate for all information needs of a coastal zone management authority. Every state will require some mixture of the two types.

In designing their information systems states should note that:

POIP systems tend to:

- rely on use of consultants;
- produce a number of "one-shot" research projects which are not necessarily compatible with each other in terms of content or format;
- require the development of original data and sometimes new techniques to deal with them; and
- be highly cost-effective in the short run.

CONCOMP systems, in contrast, tend to:

- produce "basic" information which is generally useful in a variety of situations;
- require sizeable in-house staffs to collect the information, file it, keep it current, and distribute it; and
- produce information which is extremely useful when considering changes, trends, or effects over time.

The program proposed for Nassau-Suffolk Regional Marine Resources Council[7] is a notable application of a POIP system. This proposal outlines the integrated data collection and research needs which are particularly relevant to water supply, waste water treatment and disposal, coastal stabilization, dredging, and wetlands on Long Island.

It is important to note that the Long Island proposal does not concern itself with monitoring all of the variables relevant to coastal zone planning; nor does it attempt to address the problems of water supply at a generalized or universal level. The research efforts are restricted to a small number of specific manageable problems which concern the planners and decision-makers in a specific geographical region (Long Island).

The Long Island proposal outlines six functional steps to consider in the design of a POIP system:

- (Problems)--identifies, classifies, and briefly analyzes the problems that confront planners and decision-makers with regard to the area's coastal resources.
- (Knowledge requirements)--categorizes the data and knowledge necessary to make sound decisions about the use of coastal resources.
- (State-of-the-art)--assesses the availability and adequacy of the necessary data and knowledge.
- (Knowledge gaps)--determines necessary data collection and research activities.
- (Data collection and research program)--formulates a priority-oriented, coastal zone-related data collection and research program and monitors its implementation.
- (Management information system)--develops a system for organizing and synthesizing the data and knowledge and provides analyzed information to coastal zone planners and managers.

Other recent examples of the approach using POIP systems are the Delaware Estuary System Study[8] and the Chesapeake Bay Region Study.[8] The Chesapeake study makes the point, fundamental to the POIP system concept, that outputs from information systems must frequently serve planners and managers who need quick and realistic answers to questions. The Chesapeake study also suggests some fundamental questions that should be addressed in the design of an environmental information system:

- Which problems are important?
- What aspect of the problem requires priority attention?
- Which specific research projects are required and in what sequence should they be conducted?
- How should the research results relate to the problem and how will planners and managers use the results to alleviate or solve the problem?

CONCOMP systems, on the other hand, are not usually specifically problem-oriented. They collect and process data and information descriptively--on an ongoing and comprehensive basis. Familiar examples of CONCOMP systems include Soil Conservation System reports, the U.S. Geological Survey stream monitoring programs, the Environmental Data Service climatic, oceanographic, and geophysical data programs, and the Bureau of Sport Fisheries and Wildlife migratory bird census.

4. Information System Design Considerations

When designing information systems coastal zone authorities should systematically evaluate alternative systems in terms of the following considerations.

Combination of POIP and CONCOMP systems: A carefully designed information system will employ elements of both POIP and CONCOMP systems. Nonetheless, the

number, intensity, and perhaps most significant, the immediacy of need will necessarily affect the emphasis the system takes. Some states will find themselves confronted with a large number of specific and pressing issues and problems; others will have more latitude and may find it better to establish information systems approximating the CONCOMP model.

Compatibility of information system components: Since the coastal zone authorities will require information of both the POIP and CONCOMP varieties, the question of intrasystem compatibility is a major concern. For example, the basic cartographic data collection units employed in a CONCOMP system--like the "tracts" the Bureau of Census uses--will not necessarily be the same as those employed in a POIP system; and further, standards and descriptors may vary from one POIP study to another. It is clearly in the state's interest to standardize variables, data formats, and mapping scales as much as possible. Whenever possible states should see that POIP-type information is compatible with their comprehensive information system so all components of the system can interact effectively.

Scale of in-house information services: Coastal zone management authorities will generally have to resolve the question of extent to which they develop their own information service capabilities--as opposed to using those presently available elsewhere within the state. Frequently, more information about a given subject is available than potential users realize--the problem is locating it[9]. Coastal zone authorities will often find it less costly to acquire data from existing sources (e.g., government, university, and commercial sources) rather than generate it independently.

Information coverage: There is no point in the coastal zone authority collecting data as inputs to its decision-making process unless the data is relevant to the factors the authority is mandated to consider. For example, if industrial or power plan siting is outside the purview of the authority it does not need information pertinent to regulating such activities.

Complexity of information needs: Some states will have information needs that are more complex and more pressing than others. With this in mind each state should assess the complexities and urgency inherent in its needs as it designs its information system to minimize the possibility of having to revise or restructure the system at some later date.

Spanning information gaps: It is extremely important for coastal zone authorities to determine existing sources of information relevant to their needs; assess the source's reliability; and determine its acquisition costs. The coastal zone authority can then use these determinations as a guide to identify the information gaps it must fill with new studies. Once the authority identifies the gaps it can then determine:

- How much of the missing information is vital and must be collected and when it is needed?
- How much of the missing information can feasibly be collected? (Some kinds of data will be too costly or time-consuming to acquire--given the authority's decision-making responsibilities.)
- Who should collect or retrieve the missing information? (It will not always fall to the coastal zone authority to collect the information; especially in cases where other agencies have interests or responsibilities in line with such needs.)

Continued utility of data: In the interests of efficiency, information systems should include procedures and mechanisms for continuously evaluating data utility. State coastal zone authorities should limit their data acquisition efforts to ones which will enhance their decision-making capabilities. When

the need for a particular kind of information ceases, states should consider terminating the collection program associated with that unneeded information--even if there was a sizeable previous investment involved and the body of data itself has some intrinsic value. The Section 305 regulations repeatedly caution states against conceiving of their coastal zone management authorities primarily as research organizations (920.20(d), 920.20(e), 920.21, 920.21(i)). It is important, therefore, that the management authorities put evaluation and feedback mechanisms into their information systems to monitor the usefulness of the data along with the data-handling procedures it uses.

5. Knowledge of Existing information

As discussed previously in this chapter, scientific and technical information is presently expanding at quite a rapid rate. To cite just one example, Ocean Abstracts[10] follows more than 2,000 titles each year covering what it bills as the world's current literature on the oceans. Keeping current with the rapidly expanding body of knowledge about the coastal zone is one problem all state management authorities will have.

No coastal zone authority will be able to identify all existing information relevant to its needs; therefore, there will be some duplications of effort between the management authority's development of original information and previous developments of the same information by others. However, the coastal zone management authority should try to eliminate any unnecessary duplication of effort. The Section 305 regulations underscore this point:

> In developing their management programs, states should always endeavor to locate and utilize existing information and research sources to the extent applicable and available rather than undertaking unnecessary independent research or information gathering, as part of program development effectiveness. (920.20(c))

The ongoing problems of keeping track of the continuous flow of new information fall into four categories: information sources, directories of information sources, information formats, and types of information systems and services.

Examples are cited for each of these categories in tables appearing later in the chapter. Full citations to published documents appear in the reference listing at the end of the chapter. The examples cited do not comprise a definitive listing and are included only as illustrations of what is available now or will be in the near future.

Information sources: Information sources can be divided into five basic types, ranging from the specific to the general. These are shown in the pyramid structure in Figure I below.

Levels 1 and 2 as shown in Figure I are the basic or factual information upon which decision-making depends.

Level 3 includes periodicals which present many different pieces of information on particular topics--limited or broad(e.g., Estuary and Coastal Marine Science vs. Ecology). Access to this specific information is often provided by the publications' annual indexes.

Periodicals can also be included in the fourth level when they present the assimilated information from the lower three levels in an easily accessible form. Level 4 information sources also include the types of services shown in Table I. States may often find that academic and research institutions subscribe to such services and might consider allowing the state's coastal zone authority access to them in that way.

Level 5--the apex of the pyramid--consists of various public and private data services with emphasis placed on the ones having computer storage capabilities.

TABLE I

INFORMATION SERVICES

Bibliographic and Abstract Services

Bibliographic Abstracts[11]

Environmental Law Abstracts[12]

Fuel Abstracts[13]

National Technical Information Service--Environmental Pollution[14]

Sea Grant 70's[15]

Data Services

OASIS--Oceanic and Atmospheric Scientific Information System: Technical Information Division, Environmental Information Center Environmental Data Service, National Oceanic and Atmospheric Administration, Washington, D.C.--covers data bases of interest to the marine, atmospheric, and earth science fields.

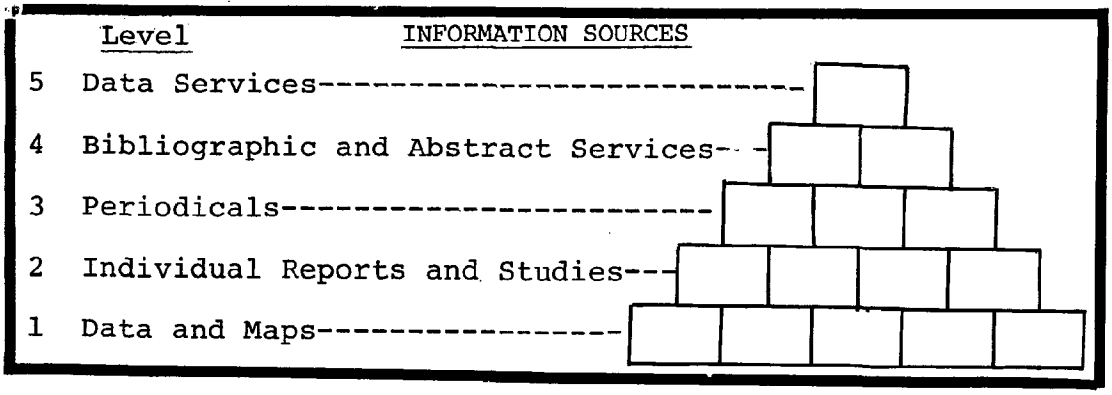
Environmental Information ACCESS--Environmental Information Center Inc., 124 E. 39th Street, New York, NY 10016--coverage of all federal environment-related documents and publications, including congressional hearings, EPA and CEQ reports, Federal Register, and Congressional Record plus 3500 international journals, conference proceedings, technical reports, newspaper articles and speeches, books and films.

Coastal Zone Management Fast Announcement Service--Datatronic Systems Corporation, Panorama City, CA 91402--a complete resource of information on coastal zone management.

National Environmental Research Center, Cincinati, OH (through the National Technical Information Service)--on-line retrieval from the National Environmental Research Center Library...for any subject of interest pertinent to environmental sciences.

WESRAC--Western Research Application Center, University of Southern California, 809 West 34th Street, Los Angeles, CA 90007--scientific, technical, and management information for many fields (including several data bases relevant to coastal zone management, such as Oceanic Index/Oceanic Citation Journal and Water Pollution Abstracts).

FIGURE 1



Using a mechanical retrieval process the data services absorb the material from the abstracting services and supply a set of collated results to their customers.

Information formats: However the information is organized--according to organization, agency, institution, or topic--and wherever it fits into the information pyramid shown in Figure I, three general types of information are distinguishable:

. Document based systems which include citations to bibliographic sources such as books, journals, newsletters, reports, and articles; as well as other related material is the first of these general types. (See Table II for an example.)

INFORMATION FORMATS

Document Based Systems

National Technical Information Service (NTIS), Weekly Government Abstracts: Environmental Pollution and Control[14]

Sea Grant Program, Sea Grant Publication Index : Sea Grant Newsletter Index[32]

Ocean Abstracts[10]

Map and Data Bases Systems

National Geophysical and Solar-Terrestrial Data Center, Environmental Data Service--National Oceanic and Atmospheric Administration (NOAA)

Earth Resources Satellite Photography (ERTS)--U.S. Geological Survey

Water Data Bank--U.S. Department of Agriculture

Geographic Applications Program (GAP)--U.S. Geological Survey

National Water Data Exchange (NAWDEX)--U.S. Geological Survey

Land Inventory and Monitoring (LIM)--U.S. Soil Conservation Service

Coastal and Offshore Environmental Inventory: Cape Hatteras to Nantucket[19]

Combinations of Document and Map/Data Based Systems

U.S. Department of Housing and Urban Development/ U.S. Geological Survey, San Francisco Bay Region Environment and Resources Planning Study[20]

U.S. National Climate Center, Environmental Data Service--NOAA

TABLE II

· Geographical and nautical map and data base systems which collect, collate, and present geographically-related and/or statistical information is the second. (See Table II for an example.)
· Combination of document-based and map/data-based systems is the third type. (See Table II for an example.)

Computerized information retrieval capabilities exist in all three types of systems. These capabilities generally key information to various descriptors--author, title, location, or other descriptive words--which can be cross-referenced to facilitate access through any of the descriptors. (See Table III for examples of such systems.)

COMPUTERIZED SYSTEMS

Document and Data Based Systems

Coastal Zone Bibliography: Citations to Documents on Planning, Resources Management, and Impact Assessment[21]

Environmental Science Information Center, Environmental Data Service

Environmental Protection Agency, STORET Program

Computer Mapping Programs

New York[22]

Minnesota[23]

Wisconsin[24]

Lake Tahoe, California[44]

TABLE III

Another source of information states should consider is information available from expert judgment or evaluations. The management authority should identify such people and maintain good communication networks with them. Coastal zone authorities can identify such talent through soliciting the opinions of community, state, and other public agencies, and special interest groups and organizations throughout the state (see discussion of generation of new ideas in Chapter V, Public Participation).[39]

Directories of information sources: Information and research sources are usually listed according to the specific organizations which collect the information (e.g., U.S. Geological Survey, Environmental Data Service), or by topics of interest (e.g., water quality, wetlands, shoreline erosion).

Sources listed by agency usually include the name of the entity collecting the information. Table IV presents some of these types of directories of sources.

Sources listed by topic are usually organized according to key words or general categories of information. Table V presents examples of some of these.

State authorities might find it helpful to prepare directories of persons with expertise in various coastal zone-related fields (e.g., ocean engineering, littoral processes). States will find such sources of expertise invaluable when information is needed quickly, and the individuals may possibly provide a better class of information to meet special needs than is available through the pertinent literature.

Types of information systems and services: As was said previously, an information system is based on either documents, maps and data, or a combination of both; it will also be either limited in geographic scope (i.e., limited to an area within a certain geographic region), limited in topical coverage (i.e., limited to a few specific areas of concern), limited in agency coverage, or a combination of one or more of these. Examples of computer applications in information management are shown in Table III.

DIRECTORIES OF INFORMATION SOURCES

AGENCY SPECIFIC

Areas of Critical Environmental Concern: Inventory and Evaluation in a Statewide Program[26]

Urban Shorelands Guide: A Discussion of Programs to Assist with the Implementation of the Lakefront Plan of Chicago[27]

Spheres of Influence in Hawaii's Coastal Zone, vol. 1, Federal Agency Involvement[28]

A Survey of Government Agencies, Studies, and Publications Concerned with the Environment of the Southern California Coastal Zone[29]

Catalog of Federal Domestic Assistance[30]

U.S. Government Organization Manual[31]

TABLE IV

TOPIC SPECIFIC

Federal Involvement in the California Coastal Zone: A Topical Index to Agency Responsibility[18]

Environmental Pollution and Control[14]

Yearly Index of Projects[32]

Coastal Zone Management Journal[17]

Marine Technology Society Journal[34]

Coastal Zone Management[33]

Water Resources Research Abstracts[16]

Oceanic Abstracts[10]

TABLE V

Figure 2 shows a matrix which uses examples to indicate the interrelationships between the types of information and the means of organizing it. Since there are

Matrix of Types of Information Systems

Information Type / Means of Organization	Data/Geographic	Documents	Combination
Geographic Area Specific	Bureau of Land Management, U.S. Department of Interior--California and Oregon Projects Contracted to Raytheon Comp.	Narragansett Bay Marine Bibliography[39]	HUD/USGS--San Francisco Bay Study[40]
Agency Specific	Environmental Data Service National Oceanic and Atmospheric Administration	National Technical Information Service, U.S. Department of Commerce (NTIS)	
Topic Specific	River Basin Studies--U.S. Bureau of Sport Fisheries and Wildlife	National Technical Information Service--Environmental Pollution and Control[31]	Environmental Information System Office, Atomic Energy Commission
Combination	USGS--CARETS; University of Rhode Island--Coastal and Offshore Environmental Inventory...[37]	Government Reports Announcements --Coastal Zone Bibliography[38]	

FIGURE 2

many other programs and studies which can easily be subsumed into this framework for organizing information systems, the coastal zone management authorities should explore more fully the other resources available which are pertinent to their needs.

With the proliferation of data services and systems, the state authority may find it difficult to determine which service, if any, will help it meet its responsibilities. In determining how its needs can best be met, the authority may ask:

- Should we subscribe to an established service? More than one?
- Should we buy computer tapes from a clearinghouse and reformat them for our specific needs?
- Should we set up our own system?

System cost will be an important factor in determining which alternative is chosen.

There are six rules for designing information systems states may find useful:[35]

- The system should not contain a particular type of data for which there is no readily identifiable use.
- Only as much of a particular class of data as is needed should be put into the system.
- The frequency with which data is needed should determine its accessibility in the system.
- The way data is to be used should determine how it is put into the system.
- Data stored in the system should be described according to source and reliability.
- The system should work just as efficiently next year as this year.

Since there is no standardized measure to determine user satisfaction with such a system, cost effectiveness is extremely difficult to assess. Each pertinent agency must decide which sources are best suited to particular needs. One method of doing this is to compare a list of sources in the different areas with which the agency is concerned, and which it has successfully utilized in the past, with the sources covered by the various available data bases. This should help determine the amount of usefulness of any particular data base.

6. Improving Information Access

The establishment of a clearinghouse is one means of improving access to information. A state level clearinghouse capability could serve as a useful tool to the coastal zone management authority. It could assimilate data and information from local sources and make it accessible to decision-makers. It could help improve access to research results and to other centers with coastal zone interests.

The scope of a clearinghouse could range from information about coastal zone management in general, to any related specific topics such as water quality, land use, power production, or fisheries. A nation-wide network of clearinghouses could also be possible, in which different centers assume responsibility for various specific topics--sharing such information among themselves and with other users. Also, regional centers are possible which could deal with the total topic--focusing on information most pertinent to their respective regions.

However it is organized, a clearinghouse should provide access to significant research and information pertinent to coastal zone management. Frequently, councils of government have set up such capabilities for particular areas of interest. Some examples of these capabilities include:

- Florida Coastal Coordinating Council (Sample Publication: Marine Studies of Florida's Gulf Coast, Summary and Selected Bibliography[36])

. Coastal Plains Center for Marine Development Services (Sample Publication: A Directory of Bibliographies Relevant to the Environment and Activities of the Coastal Plains Region[37])

The clearinghouse should maintain an index of agency responsibilities to keep aware of other information collection programs, research projects, and sources of information[18]. An index could include private organizations as well as public agencies and should be structured to list material by agency with cross-references according to topic or vice versa.

A clearinghouse could publish periodic newsletters indicating recent library acquisitions, as well as identifying continuing research projects. This is presently done in Florida[38] and Texas[15]. The clearinghouse could also maintain a unified catalog of the library holdings for all agencies and organizations it covers and make it available to its member agencies.

A clearinghouse could issue an abstracts periodical which covers the literature and other material it reviews. The clearinghouse could also develop a standard system of subject headings and key words for indexing available materials. Using standardized access terms would facilitate information transfer.

The possible functions of a clearinghouse are many and potentially complex so that before a state authority establishes one it should clearly define the clearinghouse's scope and interrelationships with other capabilities so that all of its functions will coexist effectively.

When interagency relationships are not tied to a clearinghouse function, the exchange of information is usually accomplished through a cooperative network. These networks are often formed by agencies with complementary or supplementary interests to the mutual benefit of all. If communication lines are established among research organizations and coastal zone authorities, cooperative networks might result through interagency agreements.

Such informal networks require a substantial effort to operate; however, only minimal additional administrative costs are necessary if existing organizational structures are utilized.

The nature of the information needs will generally govern both the types of information states use and the design of the system necessary to organize that information. Although these needs will vary from state to state, the basic objectives of the Coastal Zone Management Act should be a guide for all states in developing their respective information programs (for discussion of the Act's objectives see Chapter I, Introduction). Finally, in developing their information programs states could consider to what degree the collection and collection and presentation of such information will contribute to:

. Raising the level of consciousness at all levels of government and mong the public regarding the importance of managing coastal resources;
. enhancing the ability of individuals, groups, and organizations who are affected by management decisions to become involved in the decision making process;
. understanding and articulating the consequences that may result from various uses of coastal respirces; and
. preventing or minimizing the undesirable consequences of management decisions.

CITATIONS

1. E.Gerald Wermund, Coordinator, Land Resource Laboratory, Bureau of Economic Geology, University of Texas at Austin, Personal communication, May 3, 1974.

2. William Alonso, "Predicting Best with Imperfect Data," Journal of the American Institute of Planners 34(4), July, 1968.

3. Donald Appleyard, "Environmental Planning and Social Science: Strategies for Environmental Decision Making," Institute of Urban and Regional Development, University of California at Berkeley, Working Paper 217, 1973.

4. Florida Coastal Coordinating Council, Florida Coastal Zone Applied Research Needs--Second Revision, 1973.

5. F.A. Smith, et al, Fourteen Selected Marine Resource Problems of Long Island, New York: Descriptive Evaluations, Marine Resources Council, Nassau-Suffolk Regional Planning Board, January, 1970.

6. W.V. McGuinness, Priority Management Areas and Problems in the Delaware Estuary, RANN Program, National Science Foundation, 1973.

7. R. Pitchai and W.V. McGuinness, A Proposed Problem-Oriented Marine Research Program for Long Island, Marine Resources Council, Nassau-Suffolk Regional Planning Board, 1972.

8. Robert H. Ellis, et al, A Method for Applying Research to Environmental Planning and Management: A Case Study of Issues Important to the Chesapeake Region, RANN Program, National Science Foundation, 1973.

9. U.S. Environmental Protection Agency, National Environmental Information Symposium, An Agenda for Progress, National Environmental Research Center, Cincinnati, 1973.

10. Pollution Abstracts, Inc., Ocean Abstracts, La Jolla.

11. BioSciences Information Services of Biological Abstracts, Biological Abstracts, Philadelphia.

12. James Curlin and Jack D. Jones, Environmental Law Abstracts, Volume II, Oak Ridge National Laboratory, 1972.

13. Institute of Fuel, Fuel Abstracts and Current Titles, London, 1960-Present.

14. National Technical Information Service, Government Abstracts--Environmental Pollution and Control, Springfield, Virginia.

15. Texas A&M Sea Grant Program, "Sea Grant 70's", College Station.

16. Water Resources Scientific Information Center, Selected Water Resources Research Abstracts, Office of Water Resources Research, Washington.

17. Marc J. Hershman, Editor, Coastal Zone Management Journal, Crane, Russak, & Company, New York.

18. John Gamman, et al, Federal Involvement in the California Coastal Zone: A Topical Index to Agency Responsibility, University of California, Berkeley, 1974.

19. Davis J. Bressan, et al, Narragansett Marine Bibliography, Marine Resources Program, University of Rhode Island, Kingston, 1968.

20. U.S. Geological Survey and U.S. Department of Housing and Urban Development, Program Design for San Francisco Bay Region Environment and Resources Planning Study, Menlo Park, 1971

21. Jens Sorensen and Marie Demers, Coastal Zone Bibliography: Citations to Documents on Planning, Resources Management, and Impact Assessment, University of California, La Jolla, 1973.

22. D. Belcher, et al, New York State Land Use Natural Resources Inventory--Final Report, Volume 106, Center for Aerial Photographic Studies, Cornell University, Ithaca, 1971.

23. George Orning and Les Maki, Land Management Information in Northwest Minnesota: The Beginning of a Statewide System, prepared for Minnesota Land Management Information System Study, 1972.

24. L.T. Fisher and R. Thomsen, Extraction of Resource Data for CRIP--Report 6, Institute of Environmental Studies, University of Wisconsin, 1973.

25. Marine Experiment Station, Coastal and Offshore Inventory: Cape Hatteras to Nantucket Shoals, Marine Publication #2, University of Rhode Island, Narragansett, 1974.

26. Center for Natural Areas, Smithsonian Institution, Planning Considerations for Statewide Inventories of Critical Environmental Areas, U.S. Army Corps of Engineers, 1974 (In Print).

27. Russell Davenport, Urban Shorelands Guide: A Discussion of Programs to Assist with the Implementation of the Lakefront Plan of Chicago, University of Michigan Sea Grant Program, to be published in Fall of 1974.

28. Justin Rutka and Chennat Gopalakrishnan, Spheres of Influence in Hawaii's Coastal Zone--Volume 1: Federal Agency Involvement, University of Hawaii Sea Grant Program, 1973.

29. Lawrence M. Baird, A Survey of Government Agencies, Studies, and Publications Concerned with the Environment of the Southern California Coastal Zone, National Technical Information Service (COM-72-11116), 1972.

30. U.S. Office of the Management and Budget, Catalogue of Federal Domestic Assistance, U.S. Government Printing Office, Washington, Annually Printed.

31. U.S. National Archives and Record Service, U.S. Government Organization Manual U.S. Government Printing Office, Washington, Annually Printed.

32. Office of Sea Grant, Sea Grant Newsletter Index 1968-72, National Oceanic and Atmospheric Administration, 1973.

33. Nautilus Press, Inc., Coastal Zone Management, Washington.

34. Marine Technology Society, Inc., Marine Technology Society Journal, Washington.

35. R.D. Campbell and H.L. LeBlanc, An Information System for Urban Planning, George Washington University, Washington, 1972.

36. Florida Coastal Coordinating Council, Marine Environmental Studies of Florida's Gulf Coast: Summary and Selected Bibliography, Tallahassee, 1973.

37. Coastal Plains Center for Marine Development Services, A Directory of Bibliographies Relevant to the Environment and Activities of the Coastal Plains Region, Publication #72-3, Wilmington, North Carolina, 1972.

38. Florida Coastal Coordinating Council, Newsletter, Tallahassee.

39. Eugene Smith and Johnny Butler, An Expertise System for the Marine Resources Information Center, Texas A&M Sea Grant Program, 1970.

40. Office of Planning and Management, Environmental Information Systems Directory--An Inventory of Environmental Systems with Indexes, U.S. Environmental Protection Agency, Washington, 1973.

41. Charlotte Ashby, Marine Science Newsletters--1973-an annotated Bibliography, NOAA Technical Memorandum NODC-3, National Oceanographic Data Center, 1973.

42. Huey Dale Roberts, An Information System for the Management of Lake Ontario, New York State Sea Grant Program, Albany, 1973.

43. Clare A. Gunn, Annotated Bibliography of Resource Use--Texas Gulf Coast, Texas A&M Sea Grant Program, 1969.

CHAPTER V

PUBLIC PARTICIPATION

1. Introduction

Subpart D (of the Section 305 regulations), which requires public participation in the development and management of coastal zone programs, stipulates that the states must make a deliberate and careful effort to consult with citizens who have an interest in, or who are likely to experience the consequences of, coastal zone management programs, about the purpose and content of those programs. Further, Subpart D urges the states to encourage the public to enter actively into the process of creating and monitoring coastal zone management programs. The regulations stipulate that states "should seek to obtain extensive public participation in the development and administration of a coastal zone management program." (920.30.)

Several mechanisms for soliciting public involvement are mentioned. One--the public hearing--is mandatory under Section 306(c) of the Act (920.30); the others (e.g., citizen advisory committees and review groups) are encouraged as means of improving the process of program development and guaranteeing the general intent of Subpart D (920.32).

2. Reasons for Public Participation

The Section 305 regulations (920.30) set forth and briefly explain the public participation requirement. The value of public participation in decision-making processes has been widely discussed and acknowledged[1]. In part, interest in citizen involvement stems from a long-standing democratic tradition or principle that without it governmental bodies may act arbitrarily. As Judge J. Skelly Wright put it in a recent Court of Appeals opinion, there is

> an incipient but powerful trend in the law--a new refusal to rely blindly upon the unstructured exercise of official discretion and a new judicial willingness to require promulgation of and obedience to rules by administrative agencies.[2]

Citizen participation is desirable in agency policy making not only because it promotes justice and ensures greater responsiveness, but also because it facilitates the enforcement of administrative programs which depend upon public cooperation, averts disruptive criticism, and satisfies judicial demands that agencies employ high and consistent standards in their procedures[3]. Other rationales for public participation have been adduced as well. Public participation, particularly where planning for complex environments is concerned, may increase the supply of relevant information and broaden the range of decision alternatives. It may ease the mutual adjustments and compromises among individuals, groups and institutions, which are necessary in all--but especially in pluralistic, democratic societies. It may encourage citizen and community understanding of social and political processes, thereby increasing the general efficiency of government[4].

The arguments for public participation which are most directly relevant to the Act may be summarized under these headings: efficiency, social equity, program viability, and watchdog control over undue influence.

. Efficiency: If the public is not aware of or has misunderstood the intent of governmental programs economic disturbances will occur. Information is essential to all economic transactions and the absence of it may create unforeseeable but significant costs--e.g., location and investment decisions cannot be efficiently made in the absence of reliable interpretations of what a coastal zone management authority considers "permissible" and "non-permissible"

uses in a given area. Private and public resources may be committed to projects which cannot then be completed, because they are found to be in conflict with agency policy.

Public participation in the creation of coastal zone management programs is thus a means of developing and distributing the information necessary to efficient market functions. In addition, to the extent that hearings and other forums of public participation provide coastal zone management agencies with data, they may improve the internal efficiency of the agencies' own planning and administrative procedures.

. Social equity: Social equity, the second major consideration underlying Subpart D, deals with the familiar ethical principle that persons likely to be affected by governmental policies should have a significant role in their formulation. Thus, section 920.31 stipulates that public hearings must be held in those geographic areas which "would be principally affected by the decisions on issues under consideration at the hearing" (920.31(d) and that in regions where the population of the coastal zone varies seasonally, efforts must be made to hold the hearings "when those populations most likely to be affected are present." (920.31(e))

Moreover, it is a fundamental democratic axiom that government must be responsive to its citizens. "Public needs and aspirations" (920.30) must be heard and considered by coastal zone management authorities. Direct citizen involvement in the agencies' procedures for developing and administering programs is perhaps the surest means of protecting the basic principle[5]. It is important to note that this view is not merely theoretical; it is one which the courts are accepting and applying to agencies with increasing regularity. For example, in one significant recent action, a court remanded a case for further proceedings precisely because the department involved had made a far-reaching policy decision without full public discussion. The Secretary of Agriculture had refused to cancel federal registration of the pesticide DDT, and more importantly, had failed to commence the formal administrative procedures that might have resulted in termination of the registration. In remanding the case, the court held that

> the statutory scheme contemplates that these questions will be explored in the full light of a public hearing and not resolved behind the closed doors of the Secretary.

The court declared that the importance of public participation is fundamental and that particularly where it has been installed as part of the procedure for deciding important questions of policy it "may not lightly be side-stepped by administrators."[6]

. Program viability: Experience in many areas of governmental activity, notably urban renewal and transportation planning, has demonstrated that where the broad public is not permitted or encouraged to participate in program development and administration, opposition to the programs and to the agencies which promulgate them arises. The opposition may become so overwhelming that it disrupts and sometimes severely damages the programs and their parent agencies. Since its inception as Title I of the 1949 Housing Act, urban renewal has repeatedly encountered difficulties because it has failed effectively to engage the interest and support of the citizens it was inteded to help. Often, as in Chicago, an initial renewal project would go ahead (Lake Meadow); another, begun only a few years later, would encounter distinct opposition (Hyde Park-Kenwood); and in the end, projects would be passionately contested by their communities (Woodlawn and Near West Side)[7].

The cost of public suspicion and hostility, economic and social, may be high--extended litigation, project delays, antisocial behavior, etc. The Act clearly seeks to avoid such problems through an effective program of public participation which will meet "public needs and aspirations" and generate "public support." Citizen involvement in agency procedures can "measurably enhance" confidence in the agency and willingness to cooperate with it[8].

. Watchdog control over undue influence: It is a well recognized political fact that regulatory agencies have a strong tendency to drift under the influence of those industries that they are empowered to regulate[9]. Reasons for this phenomenon include:

. public relations expertise and financial strength of the regulated industry;
. ability of the regulated industry to maintain constant pressure on the agency to secure benefits deriving from favorable policy decisions and to minimize disbenefits resulting from unfavorable decisions; and
. compatability of professional and philosophical attitudes in the regulatory agencies and the regulated industries.

Public participation is one means of preventing the control of the Coastal Zone Management Authority by regulated industry, such as real estate developers or marine commerce.

> Don't think you can pass a law that sets up an agency and then go on to the next battle. It may drive you nuts, but, unfortunately, you can't. The people being regulated will capture the regulatory agency without exception if the public doesn't stay interested. If the public ever loses interest in any of these regulatory agenices, they're dead as doornails, and you might as well wipe them out.[10]

Well informed and actively involved citizen groups can monitor the transactions between the agency and the regulated industry and intervene in the regulatory process when the public interest (as these groups perceive it) it not being served. A recent analysis of public participation in the procedures of the Atomic Energy Commission examines the structure and dynamics of the three way relationship formed by public intervenors, the regulated industry, and the regulatory agency[11]. The analysis demonstrates that active public participation can be an effective deterrent to industry domination of a regulatory agency.

3. Objectives of Public Participation

Public participation will facilitate a number of specific objectives which are of interest to coastal zone management authorities. The eight objectives listed below may be conceived approximately as points on a scale: for example, the first objective cited--the "safety-valve" function--is probably the most modest achievement of public participation and it requires only the simplest kind of agency-citizen interaction, while the last objective, conflictresolution, is a much more complicated task.

. The "safety-valve" function: It is evident that no decision, particularly a governmental decision, will benefit or please everyone. If, however, the institution responsible for the decision provides the public with opportunities to register complaints, however unfounded they may seem, or in fact may be, it can relieve both pressures which have arisen between competing citizen interests and between citizen interests and itself. Public hearings often include presentations which do not introduce new information, explanations, or even points of view, but simply allow their authors to declare their

irritation and frustration. This is by no means a trivial function; on the contrary, since it reduces the probability of alienating individuals and groups from the ongoing discourse which is essential to a democratic society, the "safety-valve" function of public participation is highly useful.

. Education: Often, the public has little or faulty knowledge of the ecological--and economic--value of coastal areas. A coastal zone management authority should foster understanding of the complexity and importance of physical and biological systems in coastal zones, because such understanding is prerequisite to the informed and "meaningful" discussion of the agency's programs (920.32(a)). In California, for example, the North Central Region of the state's Coastal Zone Conservation Commission has produced a detailed document which explains the physical characteristics of the coast and processes on which life depends[12]. Summaries of this and other, similar reports are being prepared for wide distribution by newsletter type mailings[13]. The Commission has also arranged community meetings and workshops, and has made background materials available to public libraries. Oregon has taken a similar approach. The Coastal Conservation and Development Commission prepares newsletters which familiarize citizens with various aspects of the Commission's work and has held a series of one-night workshops throughout the state[14]. Non-verbal means of communicating basic information about the environment are also effective. Presentations utilzing slide shows and various forms of visual simulation have come into fairly wide use in planning. Graphic displays may more clearly communicate descriptions of and plans for complex parts of the environment than verbal reports[15].

. Management program information: Sections 920.31 and 920.32 stipulate that the coastal zone management authorities must make public all materials relevant to proposed programs (i.e., studies, documents, and reports). The intent of the Act is that, via public hearings and other mechanisms, the public will be provided extensive opporutnity to participate in coastal zone planning. This goal cannot be achieved unless agencies provide the public with clear and complete information. The public must be given a "full and effective opporutnity" to comprehend and become involved in "every portion of the plan" (920.31(c)). Agencies will sometimes find this requirement a difficult one to meet. Merely providing access to agency agenda, background studies, and data may not be a sufficient means of accomplishing the goal, particularly when the issues to which planning is addressed are complex. In such cases, the distribution of pamphlets, newsletters, or bulletins carefully explaining the agency's purposes and reasons are useful, as are small-group meetings between agency members and concerned citizens. William R. Ewald, Jr. is developing an ambitious "analysis/synthesis/communication," or access, system in the south coast region of California centered around Santa Barbara[16]. Recognizing the complexity of environmental issues and the difficulties of coordinating pertinent information from diverse sources, the system emphasizes graphic display. Ewald is exploring various sophisticated and powerful means of communication, such as computer-assisted graphics (including interactive television and plasma screen technology). Coastal zone agencies should make efforts to utilize various media effectively to disseminate the information vital to public participation.

. Identification of citizens' problems, values, and needs: Section 920.30 states that one of the principal purposes of public participation is the expression of "public needs and aspirations." Recognizing that public hearings may not be an adequate mechanism for discovering citizens' problems and needs, Section 920.32 urges that supplementary means of "ensuring" that "the public

be heard" be adopted (e.g., advisory and review groups). This stipulation has two sources--one ethical, the other practical. It is clear that attention to the public will is fundamental in a democratic society. As previously noted, there appears to be an increasing judicial inclination to rule against agencies which do not "cut the squarest of procedural corners" in allowing the public to make its views known[17]. Beyond the matter of equity, however, is the more pragmatic consideration that governmental institutions which do not understand citizens' attitudes and needs are almost certain to arouse hostility and opposition. Highway, urban renewal, and engineering projects have become increasingly vulnerable to attacks by citizens, often supported by the courts, for failure to consider adequately the problems and desires of the affected public[18]. There is no reason to think that this trend will slow or reverse itself. It is a matter, therefore, of simple self-interest for agencies to act as responsively as possible. Often, even the most conscientious efforts by agencies will not be sufficient to deduce specific groups' needs and problems; direct exposure, in public hearings or less formal contacts, will be necessary. A novel and interesting program was initiated in 1973 by the New York Regional Plan Association to elicit and identify citizen opinions and desires in the general areas of transportation, environment, poverty, housing, cities and government. The program, called Choices for '76, consisted of six television programs, one dealing with each of the areas of concern. "Ballots" were distributed in New York, New Jersey, and Connecticut, and viewers then voted on the alternatives presented in the television programs. The programs reached one and one-half to three million people of the New York region's eighteen million people, and while some sectors of the public were distinctly underrepresented in the voting, the experiment produced a wealth of information about the "needs and aspirations" of the region's population[19]. Similarly, "voting" has been used by the joint U.S.-Canadian commission responsible for Niagara Falls to determine citizen views about the most attractive method of "preserving" the Falls, although some of the schemes proposed actually contemplate substantial design changes rather than strict preservation.

. Generation of new ideas: One of the most useful functions of public participation is the generation of new ideas. It is not likely that any single group, official or not, can achieve a monopoly of relevant ideas for the larger society in which it exists. It has been observed that, though they are not frequently consulted, users of architectural structure and spaces are rich sources of innovative ideas about their design and use[20]. Similarly, the public, or in a given case some segments of it, may possess extremely valuable information and opinions. Coastal zone management agencies will find that public participation often identifies or develops:

. previously unrecognized sources of data;
. new policy and implementation alternatives;
. previously unanticipated policy impacts;
. means of ameliorating a plan's undesirable consequences;
. strategies for more effective presentation of coastal zone authorities' goals and program; and
. politically feasible trade-offs in program design.

The Act explicitly recognizes this aspect of public participation. Public hearings are considered a means of information "exchange," not merely a forum for the presentation of coastal zone authorities' predetermined plans (920.32).

The public often knows more about environmental issues than is supposed. In Maine, for example, consultants working for the state and various conservation organizations consulted with citizens and public officials about

the natural resources of the coast which they individually considered most worthy of protection. On the basis of this survey, the consultants were able to identify areas of high value for acquisition and protection which conventional "expert" inventory might well have overlooked[21].

. Review and comment on proposed policies: Section 920.32(c)(3) calls for the establishment of "processes to review component elements of the management program". Unlike public hearings, which are usually occasional in character, review and advisory procedures generally maintain a regular and continuous relationship between agencies and the public. There are various reasons why such a relationship is particularly useful:

. because its connection with an agency is continuous, a review or advisory group can alert the agency early in the planning process to impending conflicts and citizen opposition. The agency then will be able to revise or abandon policy courses which are at odds with significant public interests before committing large amounts of either time or money to their development.

. because the continuous relationship characteristic of review procedures fosters ongoing agency-citizen feedback. This is a major asset for several reasons: regular feedback shortens public reaction time and thereby often prevents minor issues from becoming full-blown crises; encouraging ongoing feedback indicates good faith on the part of the agency in its commitment to public participation and consolidates public support for the agency's programs; regular feedback facilitates and sustains--as more sporadic public hearings cannot do--the two-way information flows which are crucial to democratic decision-making.

. citizen review and advisory groups can make substantive contributions to a coastal zone management authority's program development. If the members of the groups are experts in fields such as geology, marine biology, and soil mechanics, which are of interest to the agency, their knowledge is of immense potential benefit. In addition, if the members of reviewing bodies are highly respected in their various communities, they may act effectively as intermediaries between the agency and the larger public when misunderstandings or disputes do arise. Coastal zone management authorities should be sensitive, however, to two problems inherent in the use of review and advisory groups, and, indeed, in the use of all public participatory methods. First, it will be difficult for the coastal zone management authorities to ensure that the membership of these groups is representative of the total community. It will require special effort to prevent the selection process from favoring segments of the community which are disproportionately powerful and conspicuous in political and economic terms. Second, within advisory and review groups there will be an inevitable tendency for members with larger resources--such as outside staff support--to dominate those with more meager resources. If the coastal zone management authorities are aware of this problem, they may be able to control it to some extent. For example, they may make available to all members whatever reports and data are available and provide advice or other forms of special assistance to those members who need it.

It should be noted that Section 920.32(c)(3) calls for review by the "general public" as well as by the smaller "selected citizens' groups," whose role has been discussed. It will, therefore, be appropriate to provide the public at large with opportunities to study and to comment on programs as they develop. Series of public hearings provide one mechanism for accomplishing this end. "Voting" schemes, press releases, newsletters, summary reports, and workshops constitute others.

. Evaluation of alternatives: All planning involves the formulation and consideration of alternatives, and the choice, according to some criteria, of a "best" from among them. These alternatives and the choice among them are never simply "matters of fact." Cultural, group, and individual values inevitably influence the range of alternatives which will be conceived and the principles according to which a selection of the optimum is made[22]. The Act therefore encourages the states to solicit public participation in all phases of coastal zone management and planning, from the general "development of ... goals and objectives" (920.32(c)(1)) through detailed review. It is essential for coastal zone authorities to be aware of and to take into account public attitudes and values in the process of program development. Although this is partly a matter of principle and social equity, it is also a practical matter. If coastal zone authorities are unaware of public values and "needs and aspirations," they will obviously have difficulty in determining which alternatives for coastal zone use are socially, politically, and economically realistic.

Although the evaluation of alternatives is a complicated matter under any circumstances, in decisions affecting coastal zones, where many of the environmental values are intangible or extremely difficult to quantify, the problem is heightened and increasingly subject to debate. If the public has not been involved in the development of the alternatives, decision-making will suffer in terms both of efficiency and validity. It is unlikely that the public will be able to understand the implications of the various alternatives. It will be able to treat them only in a superficial manner or with general hostility.

It is, therefore, essential that the public be engaged in the process of constructing and reacting to alternatives from the outset. In practice, this means that the requirements of public participation discussed above--education, information-distribution, review and comment, etc.--must be satisfied by the coastal zone management authority before the stage of formal alternatives evaluation is reached. In this sense, evaluation of alternatives depends on the six aspects of public participation which "precede" it in terms of difficulty and complexity; and it is prerequisite to the level of public participation which follows it--conflict anticipation and resolution.

. Conflict anticipation and resolution: It is virtually impossible to discover a single, unanimous public. Typically, each of the alternatives a planning or management authority is considering has both public partisans and critics. The hearings and other means the Act calls for may provide a forum for segments of the public to present conflicting views and also to air and negotiate the competing aims and interests as the coastal zone agency perceives them versus how the public groups do. Accommodations are more likely to be reached between interest groups, or between an interest group and a coastal zone agency, if the interest groups have in fact had an "adequate opportunity" to be heard (920.32) and the accommodations are also more likely to receive general support.

The identification of potential conflicts is one of the most important contributions the public can provide to the planning process. An agency's efficiency may be seriously impaired if it confines its view of issues and problems to the present. Public hearings or review procedures frequently raise points which reveal developing or incipient areas of public concern. Thus, public participation, in addition to raising and resolving immediate conflicts, may enable coastal zone management agencies to forecast future problems and to devise strategies for forestalling or disposing of these problems before they become critical.

4. Problems in Public Participation

The general problem in public participation programs, whether coastal zone or other governmental agencies sponsor them, is in identifying "the" public. Many recently written articles and reports demonstrate that ours is an increasingly complex and pluralistic society, a collection of interest groups competing for available resources and power[23]. It is certain, then, that a coastal zone authority typically will find itself dealing not with a single public but rather with a set of publics. The Act implicitly recognizes this face or dilemma in distinguishing between the "public at large" and "interest groups" (920.32). Indeed, it appears that one reason for urging that public hearings be supplemented by other forms of citizen participation (920.32) is the recognition that public hearings frequently are inadequate to gauge the true range and depth of public sentiments. Public hearings are vulnerable to domination by well-organized, wealthy, and politically strong interest groups which may represent the views of numerically small segments of the population. This is a compelling reason for states actively to seek out means, for instance, as appointing broadly based advisory and review bodies (920.32(c)).

In essence, the states face an option continuum with respect to public participation, a continuum whose end points or poles may be termed "self-identifying" and "identified" publics, respectively. It may be practical to accept the claims of a group or coalition of groups that it is or represents "the public" in a given case--e.g., if the citizens who are likely to be affected by a particular coastal zone plan constitute a small proportion of the population, are able to identify themselves and to represent their views, there may be no need for a coastal zone authority actively to solicit additional participation. In this case, the "public" is self identifying--it claims, legitimately, to represent the population which will be affected by the management or development policy in question and it is capable of organizing itself and arguing its point of view. In most cases, however, a coastal zone authority pro ably will not be able to obtain sufficient citizen input to comply with the intent of Subpart D merely by providing forums for self-identified publics. The agency will have to identify and solicit the participation of groups other than those which have proclaimed themselves and their interests. There are a number of parameters which states may wish to use to identify their diverse publics and to ensure that coastal zone planning is benefitting from the "extensive" public participation which the Act requires:

. Geographic: Coastal zones frequently include resources which are used by a hierarchy of publics--national, state, regional, and local. As recreation demand increases, so will competition among the various geographic groups for access to and use of the shore. Planning for the coastal zone will therefore entail obtaining the participation not only of people who live year round in the vicinity of the coastline, but also of the other, transitory users. For this reason section 920.31(e) stipulates that in coastal areas where the population fluctuates significantly with the seasons, the coastal zone agency should hold public hearings when those persons "most likely to be affected"--who may, ordinarily, reside in other parts of the state or even of the country--are present. The coastal zone authority in this instance will have to make a careful effort to identify and then to engage the cooperation of the various relevant geographic groups.

. Socio-economic and ethnic: To ensure that people of all socio-economic, ethnic, and age groups receive consideration in planning for coastal zone use,

the following observations should be considered.

Socio-economic differences characteristically affect the degree to which the groups participate in governmental processes, including planning. In the San Francisco Bay Area, for example, certain ethnic minorities have much lower rates of personal access to cars than other groups[24]. People who cannot easily get to agency meetings will be effectively discouraged from participating in the workings of the agency. In planning the timing and location of its public proceedings and in establishing mechanisms for information dissemination and informal public contacts, coastal zone management authorities should recognize the problem and should do what they can to alleviate it. Special efforts should be made to contact people who are not mobile or who are generally alienated from decision-making processes. In areas where there are substantial ethnic minorities, for example, notice of hearings might be given not only in the major media carriers but also in community newspapers and in community radio and television stations.

Coastal zone management authorities which do not obtain the participation of minorities in the development and administration of programs are likely to plan inefficiently as well as inequitably. Different socio-economic groups use the coastal zone differently. It has been observed in california that minorities exhibit distinct recreational styles. Different settings may well have more recreational or aesthetic value for some groups than others[25]. If the coastal zone management authorities are not aware of these variations in preference, obviously they will not be able to take them into account in program development, and unnecessary conflicts may result.

. Age: This is another factor which determines how people tend to use the coastal zone. Children tend to place very different recreational demands on the environment from what their elders do[26]. Once again, it is important for management authorities to keep these differences in mind and attempt to accommodate them.

. Interest groups: The many groups which have formed about a particular interest, such as boating, fishing, or hunting, represent significant numbers of people who may have unique perspectives on important public issues. If the groups are well financed and organized, they are likely to be highly visible. They will probably receive media attention and be listed in one or more of the numerous organizational directories--for example, the annual Conservation Directory[27]. A project is now under way at the University of California, Berkeley, to study 126 organizations, ranging from the International Bird Research and Rescue Team to the Pacific Chapter of the World Dredging Association, with an interest in the coastal zone. The results of the study will be produced as a directory. It is intended that the directory will make available to agencies a continuously updated inventory of the organizations which have an interest in the coastal zone and thus a claim to be heard in the formation of policies[28]. Coastal zone management authorities may have to make special efforts to contact many groups which are not formally or well organized. Analysis of available demographic (e.g., Census) and survey data, referrals from other public and private agencies, and meetings with community leaders may all be helpful.

5. Public Participation Techniques

Sections 920.31 and 920.32 mention three general public participation techniques: the public hearing, informal exchange and circulation of information, and citizen review and advisory bodies. Each of these techniques has assets and liabilities as a means of obtaining public participation and

support. Three additional techniques--advocacy planning, survey research, and direct feedback methods--will also be discussed, although they are not specifically identified in the guidelines.

. Rule-making public hearings: This is the only participatory mechanism which is mandatory (306(c)(3)). The provisions of section 920.31 specify the manner in which a coastal zone management authority must hold its hearings.

- The Act encourages early notification. It requires that notice be given no less than thirty days in advance of public hearings.
- In addition to any publication of legal notice as specified by various states' laws, Section 920.31(a) stipulates that "reasonably informative news releases" should be provided to the media in affected areas.
- All agency materials pertinent to the hearing, such as studies, data, the agenda for the meeting, etc., must be made available to the public at the time when notice of the hearings is given.
- The Act does not require that more than one hearing be held. But "The key to compliance with provisions of the Act is the assurance that the public has had an adequate opportunity to participate in the development of a plan." (920.31(c).)

When a plan is complex, or when the sector of the public which it will affect is large or diffuse, a single hearing will not be sufficient to provide the "asurance" of participation required by the Act. Instead, the authority must hold a carefully designed series of hearings in the particular geographic areas likely to be affected by plans when the impacts will be local in extent or in "places within the state where all citizens of the state may have an opportunity to comment"(920.31(d)) when comprehensive, state-wide management is involved. Hearings should be held when the people most likely to be affected are present. For example, in coastal areas which have large seasonal population shifts, the hearings should be arranged to coincide with the period of residence of the seasonal inhabitants.

A detailed and thorough summary must be presented to the public within 30 days after the conclusion of a hearing and copies of the summaries must be included in the management program documents which are submitted to the Secretary for approval.

States will generally conduct a public hearing that is "rulemaking"--as opposed to an "adjudicative" or trial-type--procedure and as such has certain advantages in policy making: All parties who may be interested are systematically notified; preliminary versions of the rules are typically made available and written comments invited and considered before final rules are adopted. Since it permits all interested parties to participate, the rulemaking public hearing is democratic; informal consultation is possible under rulemaking procedures; the open formulation of rules is preferable on grounds of equity; congressional committees and the public can much more readily monitor the activities of agencies whose business is conducted through open rulemaking[29]; even people who have not actually attended public hearings may follow their course and assess their results through the reporting of the mass media. The hearings are, thus, relatively economical as a device for disseminating information to large numbers of people and, in turn, obtaining opinions, objectives, and new information.

But the public hearing also has disadvantages, as the Act recognizes. In fact, the public hearing has the defects of its virtues. The fact that hearings are open, rather than ensuring broad public participation, often invites the participation of vocal, well-organized minorities who are familiar with the hearing process. In other words, the public hearing is vulnerable to domination by special interest groups, particularly those which have

substantial, often disproportionate, economic and political resources. For example, the requirement above (920.31(c)) that hearings on comprehensive or total coastal zone management programs be held in places "where all the citizens of the state may have an opportunity to comment," is plainly an extremely difficult one with which to comply, particularly for large states with large and heterogeneous populations. The "opportunity to comment" is plainly a function of the ability physically to attend (mobility) and, as all studies of the problems agree, mobility is not equally distributed throughout populations. The poor, minorities, and the aged may be effectively excluded from participation if hearings are the only mechanism the states provide. Furthermore, if public hearings are economical as a means of transmitting information, they are also frequently inefficient. There may not be enough time to clarify complex or controversial points, or to permit all participants to explain their points of view adequately. "Overlapping or frivolous" participation frequently occurs[30]. If the hearings are dealing with politically heated or delicate issues, they may become disorderly and break down. And, of course, it will be extremely difficult for a coastal zone agency to gauge how much of the public with which it wishes to communicate is actually represented at a public hearing. The more hearings an agency holds, the more likely it may be to obtain the desired representation. As a minimum, the Committee on Agency Organization and Procedures of the Administrative Conference of the United States recommends the following practices in public hearings:

- Making available documents, materials, and public submissions upon which any proposed program is based;
- Inviting the presentation of all views in order that the agency may be apprised of any relevant consideration before policy is formulated;
- Developing effective means of providing notice to the affected public and to groups likely to possess useful information; and
- Allocating time fairly among participants[31].

In recognition of the problems inherent in public hearings, section 920.32 suggests additional means of participation:

- Informal exchange and circulation of information: This can take place among governmental and private groups. Invitations can be extended to relevant governmental organizations outside the coastal zone management authority to contribute to the development of coastal zone programs (920.32(a) and 920.32 (b)).
- Citizen review and advisory bodies: "Mechanisms" other than the public hearings allow citizens to participate in plan construction and administration (920.32(c)).

The motivation for these various suggestions is the need to supplement the frequently awkward and insufficiently representative public hearing and to ensure close and continuing cooperation between the coastal zone management authority and the public. Some appropriate devices and techniques have been previously discussed in Part 2--citizen review and advisory groups, newsletters, public presentations of policy alternatives, etc. The general approach designed to maximize cooperation and minimize misunderstanding between agencies and the public has been identified as "collaborative planning"[32]. In Toronto, for example, the Planning Board distributes summaries of its planning districts. These proposals are then discussed in small group meetings within subareas of each district and are amended in view of what has been suggested in the meetings. Meticulous records are kept of all citizen concerns and recommendation. The advantages of such a system are

obvious: it virtually guarantees broad citizen participation; it is useful as a device for collecting and distributing information; it promotes public confidence in the planning agency and support for its programs. The drawback is that it may be extremely difficult and expensive to administer the collaborative planning approach. Godschalck identifies three principal concerns:

. Collaborative planning requires a large and well-trained staff;
. Large amounts of data are produced which are difficult and time consuming to analyze and synthesize;
. Collaborative planning reduces the amount of time available to an agency for the more traditional work of administration and plan preparation[33].

But the financial benefits may sufficiently outweigh the costs to recommend this approach, and, in any case, it is, in its general form, the method advocated by section 920.31 as a supplement to public hearings. Another successful example of the collaborative approach is available in the series of "workshops" sponsored by the Corps of Engineers in the 12 counties involved in the Puget Sound study. Though short-term and less formal than the Toronto procedure, the Puget Sound workshops brought together representatives of various federal, state, and local governments and members of the public to discuss broad policy questions affecting the environment in the 12 county study area. The workshops were essentially used to identify the most pressing concerns to be taken up at final public hearings of the Puget Sound Task Force[34].

Finally, coastal zone management authorities should consider the use of three additional participatory devices: advocacy planning, survey techniques, and direct feedback methods. Particularly in areas where coastal zone management authorities have reason to think that significant population groups are not contributing to the development and administration of coastal zone planning, the authorities will need actively to seek out information about the opinions and aspirations of those groups.

. Advocacy planning: Because the economic and political resources of various population groups are unequal, considerations of equity suggest that planners should give special support and aid to the poor and minorities involved in the coastal zone planning process. The idea that planners, rather than merely considering themselves social technicians or detached arbiters, should become advocates for the interests of the disadvantaged, is a valuable one in situations where the disparities are great between the powers of affected groups[35]. For example, staff might be allocated to produce information especially relevant to the needs of less powerful groups and to help develop and argue their points of view in formats which are technically sophisticated and comparable to those employed by more advantaged groups.

. Survey techniques: A variety of techniques has developed which will permit coastal zone management authorities to study the attitudes and preferences of selected groups. These techniques are typically expensive and require the employment of expert consultants, but they may yield data which is invaluable in terms of coastal zone program development and administration. For example, measures of leisure activity patterns and general environmental disposition have been designed and are potentially useful to coastal zone management authorities interested in the recreational proclivities of particular groups[36]. Techniques range from free, unstructured interviews to scales, checklists, and other devices. The Vermont Natural Resources Council recently commissioned a survey of public attitudes toward various environmental policy issues and legislation dealing with them. The survey revealed a number of interesting points, among them that a significant majority of

Vermonters approve of the basic provisions of the state's new environmental laws, that younger Vermonters (18-30) are the most conservation-conscious age group, and that water pollution is regarded as a more serious problem than either air quality or degradation of scenery[37]. The State of Maine is currently undertaking a similar public opinion poll which specifically includes a survey of public attitudes toward conservation and development in the coastal zone[38]. It should be emphasized that survey research is a specialized procedure; nonetheless, it is one which coastal zone management authorities may wish to consider, particularly in cases where the conventional participatory mechanisms have failed or where especially detailed and accurate information is needed.

. Direct feedback methods: As in Choices for '76 and the balloting on various schemes for preserving Niagara Falls mentioned previously, planners have made increasing use of direct feedback mechanisms such as the mock vote to discover public concerns and choices. A further recent example is provided by the American Association for the Advancement of Science's "Capitol City Readout" exposition in Washington, D.C., in which the AAAS mounted an exhibit around three themes--planning for social, physical and technical resources; community health and well-being; and use, operation and management of natural resources. Visitors to the exhibits were asked to express their preferences for various alternatives by balloting. Of the 5,000 people who attended the exposition, 2,200 cast "votes"[39].

The interactive exhibit is a device which might readily be adapted to the purposes of coastal zone management authorities, substituting issues such as coastal residential development, offshore oil terminals, etc.

The limitation of such schemes as participatory mechamisms is that they may fail to engage the interest of enough people--or enough different population groups--to produce information which is directly useful. For example, relatively few of the people who watched the Choices for '76 programs actually "voted." Of those who did vote, few were poor or elderly or members of minority groups. Nonetheless, coastal zone management authorities may wish to consider direct feedback methods as a means of presenting alternatives and obtaining at least preliminary response to them.

Whatever devices coastal zone management authorities employ, the Act clearly requires a deliberate and sustained attempt to involve the public in program development and administration. Numerous reasons for the requirement have been offered. In the end, the strongest is probably that cited in the following Court of Appeals opinion:

> The Supreme Court has made it clear in a series of cases that the right of effective participation in the political process "is of the essence of a democratic society, and any restrictions on that right strike at the heart of representative government.[40]

CITATIONS

1. Paul Davidoff, "Advocacy and Pluralism in Planning," Journal of the American Institute of Planners, XXXI, November 1965.

2. United States v. Bryant, 439 F. 2nd, 642 (1971).

3. Ernest Gelhorn,"Public Participation in Administrative Hearings," report to the Committee on Agency Organization and Procedure of the Administrative Conference of the United States, 1971.

4. Richard Warren Smith, "A Theoretical Basis for Participatory Planning," Policy Sciences, 4, 1973.

5. Cahn and Cahn, "The New Sovereign Immunity," 81 Harvard Law Review 929 (1968).

6. Environmental Defense Fund, Inc. v Ruckelshaus, 439 F2nd 584, 594 (1971).

7. K. C. Parsons, "The Role of Universities in City Renewal," in Eldredge, Taming Megalopolis, vol. II, Anchor Books, Garden City, 1967.

8. Gelhorn, op. cit., p. 1.

9. Roger Noll, Reforming Regulation: An Evaluation of the Ash Council Council Proposals, The Brookings Institution, Washington, D.C., 1971.

10. Joseph E. Bodovitz, transcript of a Conservation Foundation Forum as quoted in a review draft, "Land Use: A Challenge for the States - A Guide to State Land Use and the Coastal Zone Laws," by Wendell E. Fletcher and William J. Duddleson, Conservation Foundation, Washington, D.C., March 1974.

11. Steven Ebbin and Raphael Kasper, Citizen Groups and the Nuclear Power Controversy: Uses of Scientific and Technological Information, The MIT Press, Cambridge, 1974.

12. California Coastal Zone Conservation Commission--North Central Region, Life in the Sea, San Rafael, 1974.

13. California Coastal Zone Conservation Commission--North Central Commission, The Coast Plan Bulletin, San Rafael, 1974.

14. Oregon Coastal Conservation and Development Commission, Newsletter, Florence, 1973-1974.

15. Donald Appleyard and Kenneth Craik, "The Berkeley Environment Simulation Laboratory: Its Use in Environmental Impact Assessment," Institute of Urban and Regional Development, Working Paper No. 206, Berkeley, 1973.

16. William R. Ewald, Jr., ACCESS; The Santa Barbara Pilot Process, National Science Foundation, 1973.

17. Gelhorn, op. cit., p. 1.

18. D. C. Federation of Civic Associations, Inc. v. Volpe, 434 F. 2nd 436 (1970).

19. New York Regional Plan Association, Choices for '76, Newsletter, June 1973.

20. Robert Sommer, Personal Space: The Behavioral Basis of Design, Prentice-Hall, Inc. Englewood Cliffs, 1969.

21. Reed and D'Andrea, S. Gardner, Conservation Priorities Plan of the Coast of Maine, 1973.

22. Davidoff, op.cit., Lisa R. Peattie, "Drama and Advocacy Planning", Journal of the American Institute of Planners, XXXVI, November 1970.

23. Edward C. Banfield, "Why Government Cannot Solve the Urban Problem", Daedalus, Fall 1968.

24. Donald L. Foley, "Some Implications of Rising but Differential Access to Cars", unpublished seminar presentation, 1973.

25. Robert Lee, "The Social Definition of Outdoor Recreational Places", in Burch, Cheek, and Taylor, Social Behavior, Natural Resources, and the Environment, Harper and Row, New York, 1973.

26. Sylvia Law, Greater London Council, Surveys of the Use of Open Space, Vol. II, Research Memorandum, London, 1972.

27. National Wildlife Federation, Conservation Directory, Washington, D.C., 1973.

28. Jens Sorensen and John Ashbaugh, "A Survey of Organized Groups with an interest in the California Coastal Zone", University of California Sea Grant Program, La Jolla, California (forthcoming).

29. Kenneth Culp Davis, Administrative Law Text, West Publishing Co., St. Paul, 1972, p. 142.

30. Gellhorn, op. cit., p. 8.

31. Committee on Agency Organization and Procedure, Administrative Conference of the United States, "Recommendation B: Public Participation in Administrative Hearings", Washington, 1971, p. 2.

32. David R. Godschalk, "The Circle of Urban Participation", in Eldredge, op. cit.

33. Ibid.

34. Ann Widditsch, Public Workshops on the Puget Sound and Adjacent Waters Study: An Evaluation, The National Technical Information Service, Springfield, 1972.

35. Davidoff, op. cit.

36. George E. McKechnie, Environmental Response Inventory, 1971.

37. Vermont Natural Resources Council, An Environmental/Economic Profile of Vermont by Vermonters, Montpelier, Vermont, 1972.

38. Coastal Planning Group, Maine State Planning Office, "Maine: An Appraisal by the People", (forthcoming).

39. Thomas V. Vanier and Richard A. Scribner, Community Information Expositions, American Association for the Advancement of Science, Washington, 1973.

40. D. C. Federation of Civic Associations v. Volpe, 434 F2d 436, 441 (1970).

CHAPTER VI

ESTUARINE SANCTUARIES

1. Introduction

Section 312 of the Act authorizes the establishment of a system of estuarine sanctuaries which are to help carry out the overall purposes and objectives of the Act. The Section 312 regulations articulate this very clearly:

> The estuarine sanctuary program will provide grants to states on a matching basis to acquire, develop, and operate natural areas as estuarine sanctuaries in order that scientists and students may be provided the opportunity to examine over a period of time ecological relationships within the area. (921.1)

Furthermore,

> The purpose of the estuarine sanctuaries is to create natural field laboratories in which to gather data and make studies of the natural and human processes occuring within the coastal zone... for research and education purposes especially to provide some information essential to coastal zone management decision-making. (921.3(a))

The legistlative mandate, as well as the limited financial resources authorized under this section, mean that not all states will receive federal support to establish sanctuaries. Also, some coastal states might decide that estuarine sanctuaries are neither feasible as part of nor necessary to implement their management program. With this in mind each coastal state should consider at the outset of its program development effort the feasibility and desirability of establishing and operating an estuarine sanctuary. The consideration could include an assessment of the potential sites, a determination and analysis of the federally-imposed constraints under which the sanctuary must be operated, a realistic assessment of the probable acquisition and operating costs of the area(s), and an assessment of the benefits the state might derive from establishing the sanctuary--including the degree to which the sanctuary might be in the regional or national interest.

Those coastal states which decide an estuarine sanctuary would be both feasible and desirable can then select one of the two approaches available to them:

First, the state may apply for a grant to establish a sanctuary prior to or during its program development effort. There are a number of advantages which can result from this course of action for the state can establish a research program within the estuary that may assist it almost immediately in the development of its management program. Also, the state can make an immediate determination of the conditions in this portion of its coastal environment and translate it into a course of action to ensure the integrity of the area as well as helping to develop controls to protect other comparable or representative areas within the coastal zone. Further, by selecting an unspoiled site prior to implementing its coastal zone management program, a state can establish scientific control to use as a standard against which it can judge the effects and success or failure of its management approaches. In addition, a state could use the estuarine sanctuary as an interpretative center to show the public the principles of coastal ecology in action, along with the necessity of--or desire for--coastal zone management throughout the coastal zone, but especially in the fragile areas (e.g., wetlands and barrier dunes) and seek public support in this way for the

state's overall management plan. Finally, the state which takes the initiative early may have a competitive advantage over other equally qualified applicants for the limited funds which are available.

Alternatively, the state may delay its application until it completes its program development effort; the estuarine sanctuary would then evolve as a recommendation of the study. This approach gives the state the following advantages over what it could derive from the option described above: the state would be in a position to optimize the design of a research program to study its coastal zone problems after they are fully described; in addition, the state can design its sanctuary management program to fit into its overall program management framework without being constrained by procedures adopted on an interim basis; finally, the state can establish research priorities in full knowledge of the problems the research must address rather than chancing a change of priorities established during an interim research program--thereby possibly increasing the research costs.

The benefits of one option serve as the disbenefits of the other; so each state interested in establishing a federally supported estuarine sanctuary must make the trade-off decision between what it perceives as its need for immediate action versus the need for action only if it results from the state's systematically formulated program development recommendations.

Prior to making any final decision about applying for an estuarine sanctuary grant, states should assess other federal acquisition programs to determine the differences between them and the estuarine sanctuary program--to make sure that the program they choose is the most logical one and offers the best chance for success in terms of the state's goals for the areas. For example, the estuarine program is mandated to consider the water body as the central focus, and only to include those adjacent lands which constitute a natural ecological unit. Also, this program will only consider representative areas, not unique ones. In addition, an estuarine sanctuary is to be just that and is not to support any extensive development or other intensive activities that could compromise its status. Other programs, such as those sponsored by the Land and Water Conservation Fund, have different constraints under which they operate and different goals they are mandated to seek. Before proceeding to apply for acquisition funds from any of the programs, states should have a clear understanding both of these programs' goals and constraints and of the state's own aims for the area.

2. Designation and Delineation of an Estuarine Sanctuary

In order to receive a grant to establish an estuarine sanctuary, a state must identify an area which satisfies the criteria promulgated by the Secretary of Commerce. Certain of these criteria are reflected in the following requirements:

- The designated area must represent one of the major biogeographic classifications of estuarines listed in the Section 312 regulations (921.4).
- The area proposed for designation should not be replicative of any other area in the state already protected and where research may be conducted.
- The proposed area should be capable of assimilating impacts from other uses that are compatible with the research and education purposes (e.g., nature walks).
- The designated area should generally be as natural and undisturbed as possible and at the least should be relatively free of major development intrusions (e.g., dredge and fill operations, industrial effluents).

. While focused on or around an estuary, the area must, as nearly as possible, approximate a natural ecological unit--including adjacent wetlands and uplands.

If an estuarine area can comply with these requirements then the state has surmounted many of the problems associated with having the area designated as a federally-supported sanctuary. One important added point states should consider is the sufficiency of the land and water use controls they must adopt to protect the integrity of the sanctuary.

Natural ecological unit: The requirement to consider a natural ecological unit implies that each applicant must define the unit and then establish a legally adequate boundary for the estuarine sanctuary that approximates the natural limits of the unit--in so far as this is feasible. In order to accomplish such a delineation states should identify a set of ecosystem indicators they can use to delimit the unit. In most cases the basic unit can be hydrologically delimited and the area might be grossly defined as the mini-watershed associated with the estuary. The boundary that a state adopts though must be adequately describable from a legal standpoint. (See discussion of legal adequacy in Section II-A, Boundaries.)

A state might use one or a combination of three categories of natural factors in determining the extent of the ecosystem:

. The hydrology of the estuarine area including the scale and configuration of the allied watershed, tidal range, estuarine hydrodynamics, and rate of riverine flow into the estuary;
. the physiography of the coastal area encompassing the estuary including the geomorphology of the area, shape of the estuary, and the soil types of the watershed; and
. the flora and fauna within the watershed that are coastal species (e.g., marshgrass, shellfish, birds) and the areas of interdependence (e.g., fish nursery areas, bird rookeries) associated with the species.

Through the use of base maps and overlays each of the indicators can be represented and areas of overlap identified to determine the geographic extent of interdependence (e.g., vegetation and soils, hydrology and physiography).

Boundary determination: In order to protect and maintain the integrity of the natural ecological unit the boundary of the sanctuary might well encompass a more extensive area of the watershed then would otherwise be required. This means that the factors used to define the unit should be expanded to include impacts on the estuary caused by uses in the mini-watershed. (See discussion of direct and significant impact in Section II-A.) When uses which have a direct and significant impact on the coastal waters of the estuary are displayed in overlays, the extent of the areas of concern used to define the boundary will probably expand appreciably. This broader interpretation a natural ecological unit allows the identification of shorelands within the watershed the uses of which the state must control to protect the proposed sanctuary. The actual boundary a state adopts to define the area of acquisition may have to be a compromise since a state may find it impractical or impossible to purchase the total unit--including all of the associated shorelands. Although priority will probably be given to those states requiring a minimum of boundary compromises, a state can still protect the integrity of the estuary through the use of a set of controls regulating the uses of those shorelands not acquired.

3. Estuarine Sanctuary Uses

The purpose of the estuarine sanctuaries program is to help states acquire, develop, and operate natural areas to serve as field laboratories for scientists and students to study and investigate the ecological relationships within the areas over an extended period of time. Although the primary use of the sanctuaries is for research and education purposes, other uses are encouraged to the extent that they will not adversely affect these primary uses or the quality of the estuary. Those states which qualify for federal assistance must work with the Office of Coastal Zone Management to determine the kinds of uses--research, education, and others--and the intensity of these uses allowed in the sanctuary.

Research and education: Since the primary uses of the sanctuaries will be research and education the states which establish sanctuaries must determine which activities associated with these uses they should pursue.

Some states may have a problem of competition among possible research projects; especially where conflicts are possible among the uses associated with long-term research (e.g., scientific studies of the ecological interrelationships) and short-term research (e.g., assessing carrying capacity). This would be especially true where the research effort introduces certain human stresses to determine the limits of a resource's carrying capacity. In order to avoid any anticipated conflicts of this type, the organization controlling the sanctuary should clearly define a coordinated research program, after considering such questions as:

- Which of the specific research needs identified in the program development effort can the sanctuary accommodate?
- Which research desires separately identified by the academic community can the sanctuary also accommodate?
- How can research access be necessarily limited without jeopardizing equitable access policies?
- If the anticipated cumulative impact of the individual research efforts is direct and significant, what access and control procedures are necessary to keep the impacts within acceptable limits?

The Act and the legislative history associated with it emphasize that the sanctuaries are to be natural field laboratories to provide areas for long-term research and education uses. The Section 312 regulations present examples of such uses including those which are designed:

> (1) To gain a thorough understanding of the ecological relationships within the estuarine environment.
> (2) To make baseline ecological measurements.
> (3) To monitor significant or vital changes in the estuarine environment.
> (4) To assess the effects of man's stresses on the ecosystem and to forecast and mitigate possible deterioration from human activities.
> (5) To provide a vehicle for increasing public knowledge and awareness of the complex nature of estuarine systems, their value and benefits to man and nature, and the problems which confront them. (921.3(a))

The subject of manipulative research is also discussed with the conclusion that it will not normally be allowed in the sanctuary (921.3(c)).

The educational uses to which the sanctuary is dedicated represent another problem states must address in determining estuarine uses. In general there are three groups whose educational needs the sanctuary might help satisfy. First, there are students enrolled in formal academic programs in biological sciences or other fields involved in studying the ecological relationships

within the estuary--as separated from practicing scientists--whose needs are satisfied in the research functions. Second, there are informed members of the public (e.g., naturalists by avocation) who are interested in witnessing the range of natural phenomena that can occur unmolested in the sanctuary. Third, there are the uninformed members of the public who are interested in learning about the flora and fauna of the estuary and about the need for and purposes of coastal zone management. States must determine, in consultation with the Office of Coastal Zone Management, which audiences to satisfy and to what degree to satisfy them within the sanctuary.

Other permissible uses: Although the primary purposes of the sanctuaries are to serve as natural field laboratories, a multi-purpose philosophy is both permitted and encouraged to the extent that the primary purposes are not adversely affected. This means that a state may determine other permissible uses (see Section II-B), but with additional constraints that such uses must not degrade the quality of the estuary and will not interfere with the primary uses. A complication in the determination of other allowable uses may be the compatibility of historical or existing uses of the sanctuary area with the research efforts (e.g., commercial fishing versus scientific studies of productivity).

The determination of other permitted uses should consider a variety of factors that are reflected in the following discussion of categories of uses.

One category of allowable uses in the sanctuary, exclusive of research and education uses, includes those existing uses requiring resource attributes not available elsewhere in the region or state--subject to the determination that such uses are compatible with the research efforts and do not degrade the quality of the estuary. An example of this is an extensive scallop bed that proves to be the only productive area of its scale in the region.

Another category might include uses resulting in a substantial public benefit--subject to the qualifiers as the previous category. An example of this category is the establishment of an overlook that allows visual access to an area with exceptional scenic qualities.

A third category of allowable uses might include those uses which are non-destructive in nature or associated with low intensities--subject to the same qualifiers as the first category. An example of such use is recreational activities such as swimming, hiking, or picnicing.

These three categories of uses are representative of the types of uses which can coexist with the primary uses of the sanctuary. States will need to work with the Office of Coastal Zone Management in identifying the specific uses pertinent to each category.

Prohibited uses: The Section 312 regulations emphasize that all estuarine uses:

> ...which would cause significant short or long-term ecological change or would otherwise detract from or restrict the uses of the sanctuary as a natural field laboratory, will be prohibited. (921.5(b))

In determining prohibited uses states should find groups of uses which they will categorically exclude including:

. Uses which should be completely prohibited from the sanctuary, as withon shorelands adjacent to sanctuaries, due to the physical impact they might have on estuarine quality. These would include uses that do not or cannot comply with federal or state air and water-quality standards adopted to protect the sanctuary specifically or the coastal area in general; for example, it would generally include heavy industry and mining operations.

- Uses which should be prohibited from certain parts of the sanctuary, as well as certain of the shorelands adjacent to the sanctuary, due to their physical impact on certain elements of the estuary. These would include uses that could not comply with standards adopted for certain areas within or adjacent to the sanctuary, but could comply elsewhere; for example, it could include uses requiring physical alterations such as structures or trails on barrier dunes or aquaculture in salt ponds.
- Uses which should be prohibited from part or all of the sanctuary due to their incompatibility with the primary purpose and uses of the area. These would normally include consumptive uses of estuarine resources or other uses which could infringe on the scientific control for research established in the estuary; for example, insect or pest control activities.
- Uses which would normally be prohibited from or closely controlled in parts or all of the sanctuary due to the cumulative nature of the impacts the uses have on the area. These would include time-related accumulations as well as intensity-related ones; for example, nutrient additions from farms which become significant over time and oil slicks from pleasure boats which become significant with a high intensity of usage.
- Uses which would normally be prohibited or closely controlled in part or all of the sanctuary at certain times of the year due to possible adverse effects on the natural processes of the flora and fauna in the estuary; for example, uses which impact on bird rookery areas during the hatching period or on the estuary itself during fish spawning season.

States should select these or other categories of uses and then work with the Office of Coastal Zone Management to identify the specific uses under each category.

4. Relationship to the States Overall Program

As called for in the Section 312 regulations, the state's estuarine sanctuary program must interact with its overall coastal zone management program in two ways. First, the research conducted in the sanctuary should provide the decision-makers with an information base to assist them in the development and/or operation of the state's total management program. Second, the management program itself must recognize the sanctuary and be designed to protect it from uses of lands and waters adjacent to it which could compromise its integrity. This means that the states must include within their management structure mechanisms to control uses in these areas.

Controlling adjacent shorelands: In protecting its estuarine sanctuary, a state might identify geographic areas of particular concern outside the sanctuary, within which it could establish controls as part of the overall state coastal management program. Further, it might set priority uses in the shorelands adjacent to the sanctuary to encourage uses which are compatible with those in the sanctuary. States may find that establishing zones of control and/or setting priority uses in these and other particular areas is essential to the land and water use controls it must adopt. This action can serve the duel purpose of protecting the estuary while demonstrating the rationale behind the management program.

If a state uses areas of particular concern as zones of control to protect the sanctuary then it should choose factors to define the concern which reflect the areas' association with the sanctuary. For example, an area which is inherently unstable and so potentially erodible could cause a sedimentation problem in the estuary if the erosion processes are aggravated; so it is of concern because of the erosion potential and all uses which might

cause such problems should be excluded. (See discussion of representative factors in Section II-C, Geographic Areas of Particular Concern)

Also, a priority use which would normally be assigned to an area due to its resource attributes and other factors should be reassessed if it encouraged uses which are not compatible or conflict with the uses in the sanctuary. For example, an area inherently suitable for constructing or extending an airport should be reconsidered if such a use might interfere with the birdlife in the sanctuary.

Uses of adjacent shorelands: In determining which uses are allowable on shorelands outside the sanctuary and in what priority to encourage them states should look to key factors:

- compromises required in delimiting the sanctuary;
- scale of the adjacent shorelands requiring controls;
- inherent suitability of such areas to support uses;
- existing commitments to which shorelands are dedicated;
- impacts of uses on estuarine sanctuary;
- ability to adopt and enforce performance standards to mitigate impacts;
- ability to control uses without aggravating the "taking issue";
- ability to encourage certain compatible uses through priority designation; and
- ability to adopt innovative measures to encourage specific uses such as new taxing techniques, acquisition of partial interests in lands, purchase and lease-back of lands, among others.

Each of the factors presented above is discussed elsewhere in the document and should be referred to if additional clarification is required. They may be found in Section II-B--Permissible Uses--, Section II-D--Priority of Uses--, and Section III-A--Means of Exerting Control.

Program requirements: The state's overall coastal zone management program must reflect the existence of the estuarine sanctuary and include a set of controls to regulate, where necessary, areas not in public ownership. The control of these areas is especially important in those situations where compromises are required in defining the sanctuary's boundary.

The research plan a state adopts for its sanctuary should also identify the controls the state will use in managing or coordinating the individual research efforts.

The state should analyze all possible means of sanctuary control an select the option that best fits into its overall management structure. Towards this end, in setting up the area, states might take advantage of innovative measure to enhance their ability to control uses and impacts. Also, in the case where the watershed associated with the sanctuary is extensive, the state agency controlling the sanctuary might coordinate its program with other jurisdictions to ensure the overall control of the sanctuary with the adjacent shorelands in a compatible and effective manner.

Organizational structure to manage the sanctuary: States should consider a variety of questions when determining how the management of the sanctuary will fit into the organizational structure of their overall coastal zone management program:

- Who should manage the estuarine sanctuary?
- What arrangements should be worked out with other agencies--both public and private--to protect and manage the estuary?
- How can monitoring or surveillance programs to test the estuarine quality be adequately funded and conducted, since no Section 312 funds are available for the purpose?

- How can the estuarine sanctuary program be coordinated with other preservation-oriented programs within the state?
- How can equity in research and education access policies be guaranteed?
- How can the research results be widely disseminated.

In answering the question of who should manage the sactuary states should assess the available alternatives. These might include the estuary being managed by the state's coastal zone authority or lead agency, by some other state agency (e.g., state parks or land agency), by a consortium of institutions who will be conducting the estuarine research, or by a special purpose organization established especially to manage the sanctuary. The agency or organization the states select must have adequate authority to manage the sactuary and it should have some experience in land management as well as not being inordinately biased toward research uses to the disadvantage of education and other uses and finally, it should be held accountable to the state's overall coastal zone management program.

In determining the arrangements it must make to protect the sanctuary a state should consider several points. Among other factors these might include the existing uses on shorelands adjacent to the sanctuary, uses or categories of uses which might adversely affect the estuary, the legal limit of available controls, the compromises the state made in defining the sanctuary's boundary, the means the state selects to control permissible uses, and the need(s) to deal with other government agencies.

In determining the degree of need for and the design of the surveillance mechanism to monitor estuarine quality states should assess the cost effectiveness of such a program and identify possible sources of support. These sources might include "piggybacking" on existing water quality monitoring efforts, attaching a monitoring component to certain research projects, utilizing volunteer assistance, establishing environmental quality standards for certain users to be monitored by sensors paid for by those users, and estalbishing tax incentives to attract donors. These few potential sources could supplement support from or offer alternatives to traditional sources of budgetary support (e.g., agency budget, federal or private grants-in-aid).

In identifying possible sources of support for estuarine research states should look to both the public and private sectors. There are, of course, numerous federal and private programs that could serve as sources of support. The forms of support could include grants-in-aid for general programs or specific projects, cooperative federal-state research, technical assistance, advisory services, endowments, or outright gifts--all of which must be fitted into the research framework the state adopts. Two specific documents states might refer to in identifying sources are the Catalog of Federal Domestic Assistance[17] and the Annual Register of Grant Support.[18]

In identifying other preservation-oriented programs to coordinate their activities a state should identify all lands within its coastal area which are presently dedicated to conservation purposes; either by government or private actions (e.g., wildlife sanctuaries, wilderness areas, land banks, conservation easements, conservancy areas). States may find that the best examples of representative areas are already protected or that by acquiring certain key remaining parcels they can thus establish an estuarine sanctuary. In cases such as these though, it is essential that all agencies or organizations controlling lands or waters within the sanctuary boundary coordinate their activities in the area.

CITATIONS

1. Battelle Memorial Institute, The Economic Importance of Estuaries, Federal Water Quality Administration, 1968.

2. Battelle Memorial Institute, Oregon Areas of Environmental Concern, Northwest Laboratories, 1973.

3. Bureau of Sport Fisheries and Wildlife, National Estuary Study, (Volumes 1-7), U.S. Government Printing Office, 1970.

4. John Clark, Coastal Ecosystems: Ecological Considerations for Management of the Coastal Zone, Conservation Foundation, 1974.

5. Coastal Research Corporation, Estuarine Landscape Survey and Analysis, Bureau of Sport Fisheries and Wildlife, 1969.

6. Philip Douglas and Richard Stroud, Editors, Proceedings of Symposium on the Biological Significance of Estuaries, Sport Fishing Institute, 1970.

7. Alyn C. Duxbury, "Coastal Zone Processes and Their Influence on Estuarine Conditions", Proceedings of Nearshore and Estuarine Zone Symposium, University of Washington, 1970.

8. Federal Water Pollution Control Administration, The National Estuarine Pollution Study, U.S. Government Printing Office, 1969.

9. Georgia Vital Areas Council, Areas of Critical Environmental Concern, 1974.

10. Interagency Task Force on Environmental and Land Use Planning, Criteria for Identification of Areas of Particular Public Concern, North Carolina Office of State Planning, 1973.

11. George F. Lauff, Editor, Estuaries, American Association for the Advancement of Science--Publication #83, 1967.

12. D.F. McMichael, Conservation of Estuarine Regions and the Coastal Zone, International Union for Conservation of Nature and Natural Resources, 1972.

13. H.T. Odum et al. Editors, Coastal Ecological Systems of the United States, Conservation Foundation, 1974.

14. U.S. Senate Committee on Government Operations, Protecting America's Estuaries: Puget Sound and the Straits of Georgia and Juan de Fuca, U.S. Government Printing Office, 1972.

15. Rules and Regulations Promulgated under Section 312 of the Coastal Zone Management Act of 1972, Federal Register, 39(108), June 4, 1974.

16. Public Law 92-532, Marine Protection, Research, and Sanctuaries Act of 1972.

17. Office of Management and Budget, Catalog of Federal Domestic Assistance, U.S. Government Printing Office, Printed Annually.

18. Academic Media, 1973/74 Edition of Annual Register of Grant Support, 1974.

APPENDIX

STATE AND REGIONAL BIBLIOGRAPHY

This bibliography includes a selective and representative listing of documents organized according to geographical areas. Many of the references cited below also appear in the citations at the end of each chapter. They are also listed here to be useful to those readers interested in identifying the most up-to-date information about the efforts pertinent to the various coastal states and territories.

The references listed below include several types of documents. First, discussions of present state coastal zone programs are included. Second, representative samplings of coastal resources inventories, with recommendations for management, are included. Third, comprehensive plans for the use of coastal resources are included. Fourth, coastal zone bibliographies are included. Fifth, discussions of specific coastal-related resource management problems, with conclusions and recommendations, are included. These five types of documents will assist the readers in developing a good perspective of the coastal zone problems that the states' programs must address.

GENERAL REFERENCES

1. Earl H. Bradley, Jr. and John M. Armstrong, A Description and Analysis of Coastal Zone and Shoreland Management Programs in the United States, University of Michigan Sea Grant Program, 1972.

2. Fred Bosselman and David Callies, The Quiet Revolution in Land Use Control, U.S. Government Printing Office, 1971.

3. _____, The Taking Issue: An Analysis of the Constitutional Limits of Land Use Control, U.S. Government Printing Office, 1973.

4. Elizabeth P. Haskell, Managing the Environment: Nine States Look for New Answers, Woodrow Wilson International Center for Scholars, Smithsonian Institution, 1971.

5. Public Land Law Review Commission, One Third of the Nation's Land, U.S. Government Printing Office, 1970.

6. U.S. Bureau of Sport Fisheries and Wildlife, The National Estuary Study, U.S. Government Printing Office, 1971.

STATE REFERENCES

Alabama

1. J. H. Cammack, T. J. Joiner, and R. D. Schneeflock, Bibliography of Offshore and Estuarine Areas of Alabama with Selected Annotations, University of Alabama, 1971.

2. South Alabama Regional Planning Commission, South Alabama Regional Goals, Phase II: Program Development, 1972.

3. W. H. Wallace, Jr. et al., Alabama Planning Handbook, Alabama Development Office, 1973.

Alaska

1. Anonymous, Challenges in the Alaskan Coastal Zone, Alaska Sea Grant Publication, 72-1, 1972.

2. Sidia Selkregg (editor), Environmental Atlas of the Greater Anchorage Area Borough, Alaska Resources and Science Services, Artic Environmental Information and Data Center, University of Alaska, 1972.

California

1. California Department of Navigation and Ocean Development, Comprehensive Ocean Area Plan and Comprehensive Ocean Area Plan Supplement, Sacramento, Calif. 1972.

2. California Department of Parks and Recreation, California Coastline Preservation and Recreation Plan, Sacramento, 1971.

3. Ruthann Corwin (editor), Tomales Bay Environmental Study: Compendium of Reports. Prepared for the Conservation Foundation: Washington, D.C. 1972.

4. Peter M. Douglas, "Coastal Zone Management--A New Approach in California," Coastal Zone Management Journal, Fall, 1973, 1(1).

5. Gary D. Fay et al. (The Mendocino Coastal Research Group), The Mendocino Coast--A Vanishing Resource, Western Interstate Commission for Higher Education: Boulder, Colorado, 1972.

6. Frank Hotchkiss, James Perry, and Craig Estes, Regional Coastline Planning Program: Final Report, Appendix A: Memorandum on Meeting with Coastal Cities, Appendix B: Coastal Zone Resource Analysis System, Southern California Association of Governments, 1973.

7. Marine Technology Society, Los Angeles Section, Coastal Zone Management and the Western States' Future--Proceedings of a conference held December 3&4, Newport Beach, Ca, Northridge, 1974.

8. Marsha Rood and Robert Warren, The Urban Marina: Management and Development of Marina Del Rey, University of Southern California, Center for Urban Affairs: Los Angeles, Expected publication date: summer 1974.

9. San Diego County Comprehensive Planning Organization, Initial Coastline Plan, San Diego, Expected publication date: May 1974.

10. Sedway/Cooke, Regional Ocean Coastline Plan for the San Francisco Bay Area, Prepared for the Association of Bay Area Governments: Berkeley, 1973.

11. Sedway/Cooke, Tri-County Coastline--Stage II: A Policy Plan for Conservation and Development: A Summary of the Technical Report, San Francisco. Prepared for the Monterey, San Luis Obispo, and Santa Cruz Counties Planning Departments, 1973.

Connecticut

1. Connecticut Interagency Water Resources Planning Board, Statewide Long Range Plan for the Management of the Water Resources of Connecticut, Phase I Report, 1971.

2. Connecticut Office of State Planning, Proposed Plan for Conservation and Development for Connecticut, 1973.

3. Daniel Lufkin, The Necessity of Land Use Planning--Connecticut's Approach, New England River Basins Commission Regional Report, 1972.

Delaware

1. Delaware Bay Oil Transport Committee of the State of Delaware, Energy, Oil, and the State of Delaware--Technical Report.

2. Delaware State Planning Office, Delaware Natural Resources Inventory, 1970.

3. _____, Preliminary Delaware Coastal Zone Plan, 1973.

4. Joel M. Goodman, Economic and Social Aspects of Delaware's Coastal Zone--Delaware Bay Report Series, College of Marine Studies, University of Delaware, 1973.

5. Governor's Task Force on Marine and Coastal Affairs, The Coastal Zone of Delaware, College of Marine Studies, University of Delaware, 1972.

Florida

1. Division of State Planning, Final Report and Recommendations for the Big Cypress Area of Critical State Concern, 1973.

2. Florida Coastal Coordinating Council, Coastal Zone Management in Florida--1971, 1971.

3. _____, Coastal Zone Management in Florida--1972, 1972.

4. _____, Florida Coastal Zone Management Atlas: A Preliminary Survey and Analysis, 1972.

5. _____, Recommendations for Development Activities in Florida's Coastal Zone, 1973.

6. _____, Statistical Inventory of Key Biophysical Elements in Florida's Coastal Zone, 1973.

Georgia

1. Coastal Area Planning and Development Commission, Coastal Georgia Industrial Sites, 1973.

2. _____, Existing Land Use Survey and Analysis, 1971.

3. _____, Overall Economic Development Program for Coastal Georgia, 1970.

Hawaii

1. Doak C. Cox and Lawrence C. Gordon, Jr., Estuarine Pollution in the State of Hawaii: Volume I Statewide Study, Water Resources Research Center, University of Hawaii, Technical Report 31, 1970.

2. Chennat Golpalakishnan and Justin Rutka, "Some Institutional Constraints to Coastal Zone Development: A Case Study of Hawaii," American Journal of Economics and Sociology, To be published in Fall 1974 issue.

3. Gene Grace, Marine Atlas of Hawaii: Bays and Harbors, Hawaii Sea Grant Program, 1974.

4. Hawaii Department of Planning and Economic Development, Hawaii's Shoreline, 1964.

5. Hawaii and the Sea 1974 Task Force, Hawaii and the Sea--1974, Prepared for the Governor's Advisory Committee on Science and Technology, Department of Planning and Economic Development, 1974.

6. Justin Rutka and Chennat Gopalakishnan, Spheres of Influence in Hawaii's Coastal Zone: Volume 1 Federal Agency Involvement, University of Hawaii Sea Grant Program, 1973.

7. Stephen Smith et al., Atlas of Kaneohe Bay: A Reef Ecosystem Under Stress, The University of Hawaii Sea Grant Program, Honolulu, 1973.

Illinois

1. Department of Development and Planning, Lakefront Plan of Chicago, City of Chicago, 1973.

Louisiana

1. Engineering Agency for Resource Inventories, Inventory of Basic Environmental Data for Southern Louisiana, U.S. Army Corps of Engineers.

2. Louisiana Advisory Commission on Coastal and Marine Resources, Louisiana Wetlands Prospectus, 1973.

3. Louisiana Deep Draft Harbor and Terminal Authority, Superport Environmental Protection Plan, 1974.

4. Louisiana Wildlife and Fisheries Commission, Cooperative Gulf of Mexico Estuarine Inventory and Study, Louisiana (Phases I-IV), 1971.

Maine

1. Coastal Planning Group, Coastal Zone Management in Maine: A Natural Resources and Economic Perspective, Maine State Planning Office, In print.

2. Coastal Planning Group, Penobscot Bay Resource Plan, Maine State Planning Office, 1972.

3. Harriet P. Henry, Coastal Zone Management in Maine: A Legal Perspective, State Planning Office, 1973.

4. Maine State Planning Office, Maine Coastal Development Plan, Phase 1 Report, Maine State Planning Office, 1970.

5. Reed and D'Andrea, Conservation Priorities Plan, Coastal Overview, Reed and D'Andrea, 1973.

6. Shoreland Zoning Project, Shoreland Zoning: The Maine Experience, 1972-3, Environmental Studies Center, University of Maine, 1973.

Maryland

1. Maryland Department of State Planning, A Land Use Classification Scheme for a Statewide Land Use Inventory of Maryland, 1972.

2. Chesapeake Bay Study: Inventory of Natural Resources and Economic Development Problems, Maryland Department of State Planning, 1972.

Massachusetts

1. Citizens' Task Force on Environmental Reorganization, "Report of Coastal Zone Management Subcommittee," Executive Office of Environmental Affairs, 1972.

2. Division of Marine Fisheries, Monograph Series on Marine Resources (Number 1-17), Massachusetts Department of Natural Resources.

3. Marine Research Foundation and Conservation Law Foundation of New England, Coastal Zone Management in Massachusetts: Preliminary Recommendations, New England Regional Commission, 1972.

4. Metropolitan Area Planning Council, Boston Harbor Islands Comprehensive Plan, Massachusetts Department of Natural Resources, 1972.

Michigan

1. Michigan Department of Natural Resources, A Plan for Michigan's Shorelands, 1973.

2. University of Michigan Sea Grant Program, Traverse Bay Shorelands Management and Planning Project, 1971.

Minnesota

1. Minnesota Department of Natural Resources, A Guide for Buying...Lakeshore, Undated.

2. _____, Shoreland Management, Supplementary Report No. 1--Classification Scheme for Public Waters, 1971.

3. _____, Shoreland Management. Supplementary Report No. 2--Elements and Exploration of the Shoreland Rules and Regulations, 1971.

Mississippi

1. Mississippi Marine Resources Council, Annual Report of 1972, 1973.

2. _____, Annual Report of 1973, 1974.

3. _____, Coastal Zone Management Program, 1972.

New Hampshire

1. Resources Development Center, The Impacts of Oil Refineries Located in Southeast New Hampshire, University of New Hampshire, 1974.

New York

1. Douglas M. Carlson, Management of the Biological Resources of the Lake Ontario Basin, New York State Sea Grant Program, 1973.

2. Regional Marine Resources Council, Guidelines for Long Island Coastal Management, Nassau-Suffolk Regional Planning Board, 1973.

3. St. Lawrence-Eastern Ontario Commission, "The St. Lawrence-Eastern Ontario Shreline Study: A Planning Guide", Undated.

4. Water Resources Commission, Program for a Special Cooperative Study for Comprehensive Water Resources Development of the Long Island Sound and the North Shore of Long Island, New York, 1970.

North Carolina

1. Division of Commercial and Sport Fisheries, A Plan for the North Carolina Estuary Study, Department of Conservation and Development,1970.

2. Interagency Task Force on Environmental and Land Use Planning, Criteria for Identification of Areas of Particular Concern, North Carolina Land Policy Council, 1973.

3. North Carolina Marine Science Council, North Carolina and the Sea, 1971.

4. _____, North Carolina's Coastal Resources, 1972.

5. Office of State Planning, A Land Policy for North Carolina, Department of Administration, 1972.

6. Office of State Planning, Critical Environmental Areas of North Carolina, Department of Adminstration, 1972.

Ohio

1. Ohio Department of Natural Resources, Past Activities in Ohio's Shore Zone, 1974.

Oregon

1. Glenn Akens, Coastal Wetlands of Oregon, A natural resource inventory report ot the Oregon Coastal Conservation and Development Commission, Florence, 1973.

2. David A. Bella and Peter Klingeman, General Planning Methodology for Oregon's Estuarine Natural Resources, Oregon State University, Corvallis, 1973.

3. Oregon Coastal Conservation and Development Commission, Estuary Planning Guidelines, Florence, 1973.

4. Oregon Division of State Lands, Oregon Estuaries, State Printing Office, Salem, 1973.

5. Oregon Coastal Conservation and Development Commission, Estuarine Sanctuaries Committee, "A Proposal for an Estuarine Sanctuarine South Slough and McCaffery Slough Oregon," Florence, 1974.

Puerto Rico

1. Office of the Governor of Puerto Rico, Puerto Rico and the Sea, 1972.

Rhode Island

1. Comprehensive Transportation and Land Use Planning Program, Report of the Governor's Committee on the Coastal Zone, Rhode Island Statewide Planning Program, 1970.

2. Malcolm J. Grant, Rhode Island's Ocean Sands: Management Guidelines for Sand and Gravel Extraction in State Waters, The Coastal Resources Center, University of Rhode Island, 1973.

3. Stephen B. Olsen and Malcolm J. Grant, Rhode Island's Barrier Beaches: A Report of a Management Problem and an Evaluation of Options, The Coastal Resources Center, University of Rhode Island, 1973.

4. Rhode Island Statewide Planning Program, Program Prospectus for the Coastal Resources Management Council, Statewide Planning Program, 1971.

South Carolina

1. Coastal Plains Center for Marine Development Services, A Bibliography of the Coastal Zone for South Carolina, 1973.

2. James Hite and Eugene Laurent, Environmental Planning: An Economic Analysis, Praeger,1972.

Texas

1. Bureau of Economic Geology, Environmental Geologic Atlas of Texas Coastal Zone, Series of 8, University of Texas at Austin, 1972.

2. Division of Natural Resources and the Environment, Establishment of Operational Guidelines for Texas Coastal Zone Management, Series of 12 Reports, Division of Planning Coordination, Office of the Governor, 1974 (In Print).

3. _____, The Management of Bay and Estuarine Systems in the Texas Coastal Zone, Phase II, University of Texas at Austin, 1973.

4. Interagency Council of Natural Resources and the Environment, Texas Coastal Resources Management Program--Project Report Summaries, Division of Planning Coordination, Office of the Governor, 1973.

Virginia

1. Division of State Planning and Community Affairs, Critical Environmental Areas (by Planning District), 1972.

2. Virginia Institute of Marine Science, Gloucester County Coastal Zone, 1972.

3. _____, Local Management of Wetlands: Environmental Considerations, 1973.

4. _____, Virginia State Agencies Concerned with Coastal Zone Planning, Management, or Scientific and Engineering Activities, 1973.

Virgin Islands

1. Advisory Committee for "The U.S. Virgin Islands and the Sea," The U.S. Virgin Islands and the Sea: A Blueprint for Action, U.S. Government Printing Office, 1970.

Washington

1. Robert Bish, Robert Warren, and Louis Wechsler, Coastal Resources Use: Decisions on Puget Sound, University of Washington Press: Seattle, 1974 (In print).

2. R. Murray, Shorelines Management: The Washington Experience, University of Washington Press: Seattle, 1973.

3. Arden Olson and David Jamison, Marine Land Management In Washington, Washington Department of Natural Resources, Division of Surveys and Marine Land Management, 1973.

4. Wallace Spencer, Environmental Management for Puget Sound: Certain Problems of Political Organization and Alternative Approaches, WSG-MP 71-2, University of Washington, Division of Marine Resources: Seattle, 1973.

5. Washington Department of Ecology, Final Guidelines Shoreline Management Act of 1971, Olympia, 1972.

6. _____, Procedures for Shoreline Inventory: Shoreline Management Act of 1971, Olympia, 1972.

Wisconsin

1. Institute for Environmental Studies, The Investigation, Description, and Recommendation of a Critical Resources Information Program for Wisconsin: Phase I Report--Concepts of Resource Definitions, Uses, and Measurement of Criteria, University of Wisconsin at Madison, 1973.

2. Northwestern Wisconsin Regional Planning and Development Commission, Wisconsin's Lake Superior Shoreline, Undated.

3. _____, South Shore Resource Development Potential, Undated.

4. Southeastern Wisconsin Regional Planning Commission, Floodland and Shoreland Development Guide, 1969.

5. A. R. Striege, Shoreland and Flood Plain Zoning Along the Wisconsin Shore of Lake Michigan, Wisconsin Department of Natural Resources, 1970.

REGIONAL REFERENCES

Atlantic Coast

1. New England River Basins Commission, A Suggested Approach to Coordinated Planning and Action for Conservation and Development of the Coastal Zone, New England River Basins Commission, Undated.

2. _____, Long Island Sound Regional Study, Interim Reports, New England River Basins Commission, 1973.

3. _____, Southeast New England Regional Study, Interim Reports, New England River Basins Commission, 1973.

4. _____, A Possible Approach to A Comprehensive Water and Related Land Resource Planning Program for the Maine-New Hampshire Coastal Basins, New England River Basins Commission, 1973.

5. George P. Spinner, A Plan for the Marine Resources of the Atlantic Coastal Zone, American Geographical Society, 1969.

6. Tri-State Regional Planning Commission, "An Interim Management Guide for the Tri-State Coastal Zone," Tri-State Regional Planning Commission, In Print.

7. Anonymous, North Atlantic Region Water Resources Study--Appendix U, Coastal and Estuarine Areas, U.S. Army Corps of Engineers, 1972.

Great Lakes

1. Arrowhead Regional Development Commission and Northwest Wisconsin Regional Planning and Development Commission, Lake Superior Basin Water Quality Management Study, In Print.

2. James A. Burkholder, Natural Resources Management in the Great Lakes Basin, New York State Sea Grant Program, 1973.

3. Schenker and Bunamo, The Great Lakes Container Dilemma, University of Wisconsin Sea Grant Program, 1971.

4. University of Wisconsin Sea Grant Program, Multiple-Use Problems in the Great Lakes, 1972.

5. _____, "Our Great Lakes," 1973.

Coastal Zone Management Act of 1972

P.L. 92-583

TITLE III—MANAGEMENT OF THE COASTAL ZONE

SHORT TITLE

SEC. 301. This title may be cited as the "Coastal Zone Management Act of 1972".

CONGRESSIONAL FINDINGS

SEC. 302. The Congress finds that—

(a) There is a national interest in the effective management, beneficial use, protection, and development of the coastal zone;

(b) The coastal zone is rich in a variety of natural, commercial, recreational, industrial, and esthetic resources of immediate and potential value to the present and future well-being of the Nation;

(c) The increasing and competing demands upon the lands and waters of our coastal zone occasioned by population growth and economic development, including requirements for industry, commerce, residential development, recreation, extraction of mineral resources and fossil fuels, transportation and navigation, waste disposal, and harvesting of fish, shellfish, and other living marine resources, have resulted in the loss of living marine resources, wildlife, nutrient-rich areas, permanent and adverse changes to ecological systems, decreasing open space for public use, and shoreline erosion;

(d) The coastal zone, and the fish, shellfish, other living marine resources, and wildlife therein, are ecologically fragile and consequently extremely vulnerable to destruction by man's alterations;

(e) Important ecological, cultural, historic, and esthetic values in the coastal zone which are essential to the well-being of all citizens are being irretrievably damaged or lost;

(f) Special natural and scenic characteristics are being damaged by ill-planned development that threatens these values;

(g) In light of competing demands and the urgent need to protect and to give high priority to natural systems in the coastal zone, present state and local institutional arrangements for planning and regulating land and water uses in such areas are inadequate; and

(h) The key to more effective protection and use of the land and water resources of the coastal zone is to encourage the states to exercise their full authority over the lands and waters in the coastal zone by assisting the states, in cooperation with Federal and local governments and other vitally affected interests, in developing land and water use programs for the coastal zone, including unified policies, criteria, standards, methods, and processes for dealing with land and water use decisions of more than local significance.

DECLARATION OF POLICY

SEC. 303. The Congress finds and declares that it is the national policy (a) to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations, (b) to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone giving full consideration to ecological, cultural, historic, and esthetic values as well as to needs for economic development, (c) for all Federal agencies engaged in programs affecting the coastal zone to cooperate and participate with state and local governments and regional agencies in effectuating the purposes of this title, and (d) to encourage the participation of the public, of Federal, state, and local governments and of regional agencies in the development of coastal zone management programs. With respect to implementation of such managament programs, it is the national policy to encourage cooperation among the various state and regional agencies including establishment of interstate and regional agreements, cooperative procedures, and joint action particularly regarding environmental problems.

DEFINITIONS

SEC. 304. For the purposes of this title—

(a) "Coastal zone" means the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal states, and includes transitional and intertidal areas, salt marshes, wetlands, and beaches. The zone extends, in Great Lakes waters, to the international boundary between the United States and Canada and, in other areas, seaward to the outer limit of the United States territorial sea. The zone extends inland from the shorelines only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters. Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers or agents.

(b) "Coastal waters" means (1) in the Great Lakes area, the waters within the territorial jurisdiction of the United States consisting of the Great Lakes, their connecting waters, harbors, roadsteads, and estuary-type areas such as bays, shallows, and marshes and (2) in other areas, those waters, adjacent to the shorelines, which contain a measurable quantity or percentage of sea water, including, but not limited to, sounds, bays, lagoons, bayous, ponds, and estuaries.

(c) "Coastal state" means a state of the United States in, or bordering on, the Atlantic, Pacific, or Arctic Ocean, the Gulf of Mexico, Long Island Sound, or one or more of the Great Lakes. For the purposes of this title, the term also includes Puerto Rico, the Virgin Islands, Guam, and American Samoa.

(d) "Estuary" means that part of a river or stream or other body of water having unimpaired connection with the open sea, where the sea water is measurably diluted with fresh water derived from land drainage. The term includes estuary-type areas of the Great Lakes.

(e) "Estuarine sanctuary" means a research area which may include any part or all of an estuary, adjoining transitional areas, and adjacent uplands, constituting to the extent feasible a natural unit, set aside to provide scientists and students the opportunity to examine over a period of time the ecological relationships within the area.

(f) "Secretary" means the Secretary of Commerce.

(g) "Management program" includes, but is not limited to, a comprehensive statement in words, maps, illustrations, or other media of communication, prepared and adopted by the state in accordance with the provisions of this title, setting forth objectives, policies, and standards to guide public and private uses of lands and waters in the coastal zone.

(h) "Water use" means activities which are conducted in or on the water; but does not mean or include the establishment of any water quality standard or criteria or the regulation of the discharge or runoff of water pollutants except the standards, criteria, or regulations which are incorporated in any program as required by the provisions of section 307(f).

(i) "Land use" means activities which are conducted in or on the shorelands within the coastal zone, subject to the requirements outlined in section 307(g).

MANAGEMENT PROGRAM DEVELOPMENT GRANTS

SEC. 305. (a) The Secretary is authorized to make annual grants to any coastal state for the purpose of assisting in the development of a management program for the land and water resources of its coastal zone.

(b) Such management program shall include:

(1) an identification of the boundaries of the coastal zone subject to the management program;

(2) a definition of what shall constitute permissible land and water uses within the coastal zone which have a direct and significant impact on the coastal waters;

(3) an inventory and designation of areas of particular concern within the coastal zone;

(4) an identification of the means by which the state proposes to exert control over the land and water uses referred to in paragraph (2) of this subsection, including a listing of relevant constitutional provisions, legislative enactments, regulations, and judicial decisions;

(5) broad guidelines on priority of uses in particular areas, including specifically those uses of lowest priority;

(6) a description of the organizational structure proposed to

implement the management program, including the responsibilities and interrelationships of local, areawide, state, regional, and interstate agencies in the management process.

(c) The grants shall not exceed 66⅔ per centum of the costs of the program in any one year and no state shall be eligible to receive more than three annual grants pursuant to this section. Federal funds received from other sources shall not be used to match such grants. In order to qualify for grants under this section, the state must reasonably demonstrate to the satisfaction of the Secretary that such grants will be used to develop a management program consistent with the requirements set forth in section 306 of this title. After making the initial grant to a coastal state, no subsequent grant shall be made under this section unless the Secretary finds that the state is satisfactorily developing such management program.

(d) Upon completion of the development of the state's management program, the state shall submit such program to the Secretary for review and approval pursuant to the provisions of section 306 of this title, or such other action as he deems necessary. On final approval of such program by the Secretary, the state's eligibility for further grants under this section shall terminate, and the state shall be eligible for grants under section 306 of this title.

(e) Grants under this section shall be allocated to the states based on rules and regulations promulgated by the Secretary: *Provided, however*, That no management program development grant under this section shall be made in excess of 10 per centum nor less than 1 per centum of the total amount appropriated to carry out the purposes of this section.

(f) Grants or portions thereof not obligated by a state during the fiscal year for which they were first authorized to be obligated by the state, or during the fiscal year immediately following, shall revert to the Secretary, and shall be added by him to the funds available for grants under this section.

(g) With the approval of the Secretary, the state may allocate to a local government, to an areawide agency designated under section 204 of the Demonstration Cities and Metropolitan Development Act of 1966, to a regional agency, or to an interstate agency, a portion of the grant under this section, for the purpose of carrying out the provisions of this section.

(h) The authority to make grants under this section shall expire on June 30, 1977.

ADMINISTRATIVE GRANTS

SEC. 306. (a) The Secretary is authorized to make annual grants to any coastal state for not more than 66⅔ per centum of the costs of administering the state's management program, if he approves such program in accordance with subsection (c) hereof. Federal funds received from other sources shall not be used to pay the state's share of costs.

(b) Such grants shall be allocated to the states with approved programs based on rules and regulations promulgated by the Secretary which shall take into account the extent and nature of the shoreline and area covered by the plan, population of the area, and other relevant factors: *Provided, however*, That no annual administrative grant under this section shall be made in excess of 10 per centum nor less than 1 per centum of the total amount appropriated to carry out the purposes of this section.

(c) Prior to granting approval of a management program submitted by a coastal state, the Secretary shall find that:

(1) The state has developed and adopted a management program for its coastal zone in accordance with rules and regulations promulgated by the Secretary, after notice, and with the opportunity of full participation by relevant Federal agencies, state agencies, local governments, regional organizations, port authorities, and other interested parties, public and private, which is adequate to carry out the purposes of this title and is consistent with the policy declared in section 303 of this title.

(2) The state has:

(A) coordinated its program with local, areawide, and interstate plans applicable to areas within the coastal zone existing on January 1 of the year in which the state's management program is submitted to the Secretary, which plans have been developed by a local government, an areawide agency designated pursuant to regulations established under section 204 of the Demonstration Cities and Metropolitan Development Act of 1966, a regional agency, or an interstate agency; and

(B) established an effective mechanism for continuing consultation and coordination between the management agency designated pursuant to paragraph (5) of this subsection and with local governments, interstate agencies, regional agencies, and areawide agencies within the coastal zone to assure the full participation of such local governments and agencies in carrying out the purposes of this title.

(3) The state has held public hearings in the development of the management program.

(4) The management program and any changes thereto have been reviewed and approved by the Governor.

(5) The Governor of the state has designated a single agency to receive and administer the grants for implementing the management program required under paragraph (1) of this subsection.

(6) The state is organized to implement the management program required under paragraph (1) of this subsection.

(7) The state has the authorities necessary to implement the program, including the authority required under subsection (d) of this section.

(8) The management program provides for adequate consideration of the national interest involved in the siting of facilities necessary to meet requirements which are other than local in nature.

(9) The management program makes provision for procedures whereby specific areas may be designated for the purpose of preserving or restoring them for their conservation, recreational, ecological, or esthetic values.

(d) Prior to granting approval of the management program, the Secretary shall find that the state, acting through its chosen agency or agencies, including local governments, areawide agencies designated under section 204 of the Demonstration Cities and Metropolitan Development Act of 1966, regional agencies, or interstate agencies, has authority for the management of the coastal zone in accordance with the management program. Such authority shall include power—

(1) to administer land and water use regulations, control development in order to ensure compliance with the management program, and to resolve conflicts among competing uses; and

(2) to acquire fee simple and less than fee simple interests in lands, waters, and other property through condemnation or other means when necessary to achieve conformance with the management program.

(e) Prior to granting approval, the Secretary shall also find that the program provides:

(1) for any one or a combination of the following general techniques for control of land and water uses within the coastal zone;

(A) State establishment of criteria and standards for local implementation, subject to administrative review and enforcement of compliance;

(B) Direct state land and water use planning and regulation; or

(C) State administrative review for consistency with the management program of all development plans, projects, or land and water use regulations, including exceptions and variances thereto, proposed by any state or local authority or private developer, with power to approve or disapprove after public notice and an opportunity for hearings.

(2) for a method of assuring that local land and water use regulations within the coastal zone do not unreasonably restrict or exclude land and water uses of regional benefit.

(f) With the approval of the Secretary, a state may allocate to a local government, an areawide agency designated under section 204 of the Demonstration Cities and Metropolitan Development Act of 1966, a regional agency, or an interstate agency, a portion of the grant under this section for the purpose of carrying out the provisions of this section: *Provided*, That such allocation shall not relieve the state of the responsibility for ensuring that any funds so allocated are applied in furtherance of such state's approved management program.

(g) The state shall be authorized to amend the management program. The modification shall be in accordance with the procedures required under subsection (c) of this section. Any amendment or modification of the program must be approved by the Secretary before additional administrative grants are made to the state under the program as amended.

(h) At the discretion of the state and with the approval of the Secretary, a management program may be developed and adopted in segments so that immediate attention may be devoted to those areas within the coastal zone which most urgently need management programs: *Provided*, That the state adequately provides for the ultimate coordination of the various segments of the management program into a single unified program and that the unified program will be completed as soon as is reasonably practicable.

INTERAGENCY COORDINATION AND COOPERATION

SEC. 307. (a) In carrying out his functions and responsibilities under this title, the Secretary shall consult with, cooperate with, and, to the maximum extent practicable, coordinate his activities with other interested Federal agencies.

(b) The Secretary shall not approve the management program submitted by a state pursuant to section 306 unless the views of Federal agencies principally affected by such program have been adequately considered. In case of serious disagreement between any Federal agency and the state in the development of the program the Secretary, in cooperation with the Executive Office of the President, shall seek to mediate the differences.

(c)(1) Each Federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs.

(2) Any Federal agency which shall undertake any development project in the coastal zone of a state shall insure that the project is, to the maximum extent practicable, consistent with approved state management programs.

(3) After final approval by the Secretary of a state's management program, any applicant for a required Federal license or permit to conduct an activity affecting land or water uses in the coastal zone of that state shall provide in the application to the licensing or permitting agency a certification that the proposed activity complies with the state's approved program and that such activity will be conducted in a manner consistent with the program. At the same time, the applicant shall furnish to the state or its designated agency a copy of the certification, with all necessary information and data. Each coastal state shall establish procedures for public notice in the case of all such certifications and, to the extent it deems appropriate, procedures for public hearings in connection therewith. At the earliest practicable time, the state or its designated agency shall notify the Federal agency concerned that the state concurs with or objects to the applicant's certification. If the state or its designated agency fails to furnish the required notification within six months after receipt of its copy of the applicant's certification, the state's concurrence with the certification shall be conclusively presumed. No license or permit shall be granted by the Federal agency until the state or its designated agency has concurred with the applicant's certification or until, by the state's failure to act, the concurrence is conclusively presumed, unless the Secretary,

on his own initiative or upon appeal by the applicant, finds, after providing a reasonable opportunity for detailed comments from the Federal agency involved and from the state, that the activity is consistent with the objectives of this title or is otherwise necessary in the interest of national security.

(d) State and local governments submitting applications for Federal assistance under other Federal programs affecting the coastal zone shall indicate the views of the appropriate state or local agency as to the relationship of such activities to the approved management program for the coastal zone. Such applications shall be submitted and coordinated in accordance with the provisions of title IV of the Intergovernmental Coordination Act of 1968 (82 Stat. 1098). Federal agencies shall not approve proposed projects that are inconsistent with a coastal state's management program, except upon a finding by the Secretary that such project is consistent with the purposes of this title or necessary in the interest of national security.

(e) Nothing in this title shall be construed—

(1) to diminish either Federal or state jurisdiction, responsibility, or rights in the field of planning, development, or control of water resources, submerged lands, or navigable waters; nor to displace, supersede, limit, or modify any interstate compact or the jurisdiction or responsibility of any legally established joint or common agency of two or more states or of two or more states and the Federal Government; nor to limit the authority of Congress to authorize and fund projects;

(2) as superseding, modifying, or repealing existing laws applicable to the various Federal agencies; nor to affect the jurisdiction, powers, or prerogatives of the International Joint Commission, United States and Canada, the Permanent Engineering Board, and the United States operating entity or entities established pursuant to the Columbia River Basin Treaty, signed at Washington, January 17, 1961, or the International Boundary and Water Commission, United States and Mexico.

(f) Notwithstanding any other provision of this title, nothing in this title shall in any way affect any requirement (1) established by the Federal Water Pollution Control Act, as amended, or the Clean Air Act, as amended, or (2) established by the Federal Government or by any state or local government pursuant to such Acts. Such requirements shall be incorporated in any program developed pursuant to this title and shall be the water pollution control and air pollution control requirements applicable to such program.

(g) When any state's coastal zone management program, submitted for approval or proposed for modification pursuant to section 306 of this title, includes requirements as to shorelands which also would be subject to any Federally supported national land use program which may be hereafter enacted, the Secretary, prior to approving such program, shall obtain the concurrence of the Secretary of the Interior, or such other Federal official as may be designated to administer the national land use program, with respect to that portion of the coastal zone management program affecting such inland areas.

PUBLIC HEARINGS

SEC. 308. All public hearings required under this title must be announced at least thirty days prior to the hearing date. At the time of the announcement, all agency materials pertinent to the hearings, including documents, studies, and other data, must be made available to the public for review and study. As similar materials are subsequently developed, they shall be made available to the public as they become available to the agency.

REVIEW OF PERFORMANCE

SEC. 309. (a) The Secretary shall conduct a continuing review of the management programs of the coastal states and of the performance of each state.

(b) The Secretary shall have the authority to terminate any financial assistance extended under section 306 and to withdraw any unexpended portion of such assistance if (1) he determines that the state is failing to adhere to and is not justified in deviating from the program approved by the Secretary; and (2) the state has been given notice of the proposed termination and withdrawal and given an opportunity to present evidence of adherence or justification for altering its program.

RECORDS

SEC. 310. (a) Each recipient of a grant under this title shall keep such records as the Secretary shall prescribe, including records which fully disclose the amount and disposition of the funds received under the grant, the total cost of the project or undertaking supplied by other sources, and such other records as will facilitate an effective audit.

(b) The Secretary and the Comptroller General of the United States, or any of their duly authorized representatives, shall have access for the purpose of audit and examination to any books, documents, papers, and records of the recipient of the grant that are pertinent to the determination that funds granted are used in accordance with this title.

ADVISORY COMMITTEE

SEC. 311. (a) The Secretary is authorized and directed to establish a Coastal Zone Management Advisory Committee to advise, consult with, and make recommendations to the Secretary on matters of policy concerning the coastal zone. Such committee shall be composed of not more than fifteen persons designated by the Secretary and shall perform such functions and operate in such a manner as the Secretary may direct. The Secretary shall insure that the committee membership as a group possesses a broad range of experience and knowledge relating to problems involving management, use, conservation, protection, and development of coastal zone resources.

(b) Members of the committee who are not regular full-time employees of the United States, while serving on the business of the committee, including traveltime, may receive compensation at rates not exceeding $100 per diem; and while so serving away from their homes or regular places of business may be allowed travel expenses, including per diem in lieu of subsistence, as authorized by section 5703 of title 5, United States Code, for individuals in the Government service employed intermittently.

ESTUARINE SANCTUARIES

SEC. 312. The Secretary, in accordance with rules and regulations promulgated by him, is authorized to make available to a coastal state grants of up to 50 per centum of the costs of acquisition, development, and operation of estuarine sanctuaries for the purpose of creating natural field laboratories to gather data and make studies of the natural and human processes occurring within the estuaries of the coastal zone. The Federal share of the cost for each such sanctuary shall not exceed $2,000,000. No Federal funds received pursuant to section 305 or section 306 shall be used for the purpose of this section.

ANNUAL REPORT

SEC. 313. (a) The Secretary shall prepare and submit to the President for transmittal to the Congress not later than November 1 of each year a report on the administration of this title for the preceding fiscal year. The report shall include but not be restricted to (1) an identification of the state programs approved pursuant to this title during the preceding Federal fiscal year and a description of those programs; (2) a listing of the states participating in the provisions of this title and a description of the status of each state's programs and its accomplishments during the preceding Federal fiscal year; (3) an itemization of the allocation of funds to the various coastal states and a breakdown of the major projects and areas on which these funds were expended; (4) an identification of any state programs which have been reviewed and disapproved or with respect to which grants have been terminated under this title, and a statement of the reasons for such action; (5) a listing of all activities and projects which, pursuant to the provisions of subsection (c) or subsection (d) of section 307, are not consistent with an applicable approved state management program; (6) a summary of the regulations issued by the Secretary or in effect during the preceding Federal fiscal year; (7) a summary of a coordinated national strategy and program for the Nation's coastal zone including identification and discussion of Federal, regional, state, and local responsibilities and functions therein; (8) a summary of outstanding problems arising in the administration of this title in order of priority; and (9) such other information as may be appropriate.

(b) The report required by subsection (a) shall contain such recommendations for additional legislation as the Secretary deems necessary to achieve the objectives of this title and enhance its effective operation.

RULES AND REGULATIONS

SEC. 314. The Secretary shall develop and promulgate, pursuant to section 553 of title 5, United States Code, after notice and opportunity for full participation by relevant Federal agencies, state agencies, local governments, regional organizations, port authorities, and other interested parties, both public and private, such rules and regulations as may be necessary to carry out the provisions of this title.

AUTHORIZATION OF APPROPRIATIONS

SEC. 315. (a) There are authorized to be appropriated—

(1) the sum of $9,000,000 for the fiscal year ending June 30, 1973, and for each of the fiscal years 1974 through 1977 for grants under section 305, to remain available until expended;

(2) such sums, not to exceed $30,000,000, for the fiscal year ending June 30, 1974, and for each of the fiscal years 1975 through 1977, as may be necessary, for grants under section 306 to remain available until expended; and

(3) such sums, not to exceed $6,000,000 for the fiscal year ending June 30, 1974, as may be necessary, for grants under section 312, to remain available until expended.

(b) There are also authorized to be appropriated such sums, not to exceed $3,000,000, for fiscal year 1973 and for each of the four succeeding fiscal years, as may be necessary for administrative expenses incident to the administration of this title.

Approved October 27, 1972.

LEGISLATIVE HISTORY:

HOUSE REPORTS: No. 92-1049 accompanying H.R. 14146 (Comm. on Merchant Marine and Fisheries) and No. 92-1544 (Comm. of Conference).
SENATE REPORT No. 92-753 (Comm. on Commerce).
CONGRESSIONAL RECORD, Vol. 118 (1972):
Apr. 25, considered and passed Senate.
Aug. 2, considered and passed House, amended, in lieu of H.R. 14146.
Oct. 12, House and Senate agreed to conference report.
WEEKLY COMPILATION OF PRESIDENTIAL DOCUMENTS, Vol. 8, No. 44:
Oct. 28, Presidential statement.

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

■

COASTAL ZONE MANAGEMENT PROGRAM DEVELOPMENT GRANTS

NOTICE OF FINAL RULEMAKING

Title 15—Commerce and Foreign Trade

CHAPTER IX—NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEPARTMENT OF COMMERCE

PART 920—COASTAL ZONE MANAGEMENT PROGRAM DEVELOPMENT GRANTS

The National Oceanic and Atmospheric Administration (NOAA) on June 13, 1973, proposed guidelines (originally published as 15 CFR Part 960), pursuant to section 305 of the Coastal Zone Management Act of 1972 (Pub. L. No. 92–583, 86 Stat. 1280), hereinafter referred to as the "Act," for the purpose of defining the procedures by which States can qualify to receive development grants under section 305 of the Act and policies for development of their management program.

Written comments were to be submitted to the Office of Coastal Environment, National Oceanic and Atmospheric Administration before August 13, 1973, and consideration has been given these comments.

The Act recognizes that the coastal zone is rich in a variety of natural, commercial, recreational, industrial, and esthetic resources of immediate and potential value to the present and future well-being of the Nation. Present State and institutional arrangements for planning and regulating land and water uses in the coastal zone are often inadequate to deal with the competing demands and the urgent need to protect natural systems in the ecologically fragile area. Section 305 of the Act authorizes annual grants to any coastal State for the purpose of assisting the State in the development of a management program for the land and water resources of its coastal zone (development grant). Once a coastal State has developed a management program it is submitted to the Secretary of Commerce for approval and, if approved, the State is then eligible, under section 306, to receive annual grants for administering its management program (administrative grants).

The guidelines contained in this part are for grants under section 305 to develop a management program that will meet the requirements of section 306. Section 305 provides guidance as to what must be included in a management program while section 306 sets forth requirements that must be met before the Secretary can approve a State's management program for administrative grants. Participating States, therefore, must insure that the management program they develop under section 305 will meet the requirements of section 306. These guidelines incorporate some of the requirements of section 306. Guidelines for section 306 are being developed and will be published when available.

In general terms, section 305 requires a management program to include (1) the boundaries of the State's coastal zone; (2) a process pursuant to which permissible land and water uses which have a direct and significant impact on coastal waters are defined; (3) criteria for and designation of geographic areas in the coastal zone of particular concern to the State; (4) identification or establishment of the means by which the State, together with other levels of government, shall exert control over the land and water uses in its coastal zone; (5) designation of priority uses within specific geographic areas throughout the coastal zone; and (6) description of the organizational structure and intergovernmental arrangements sufficient to develop and maintain an effective and coordinated management process.

The National Oceanic and Atmospheric Administration is publishing herewith the final regulations describing procedures for applications to receive development grants under section 305 of the Act. The final regulations and criteria published herewith were revised from the proposed guidelines based on the comments received. A total of sixty-three (63) States, agencies, organizations and individuals submitted responses to the proposed section 305 Guidelines published in the FEDERAL REGISTER on June 13, 1973. Of those responses received, twelve (12) were wholly favorable as to the nature and content of the Guidelines as they appear in the FEDERAL REGISTER on June 13, 1973. Forty-one (41) commentators submitted suggestions concerning the proposed section 305 Guidelines.

The following analysis summarizes key comments received on various sections of the interim regulations and presents a rationale for the changes made:

1. Several commentators asserted that there was a need for further elaboration on the definitions contained under § 920.2. No changes were made in response to these comments since the present definitions allow the States to adjust their programs as local conditions require.

2. Sixteen comments were received on the necessity of submitting an Environmental Impact Statement as required by § 920.10(c). The National Environmental Policy Act, 42 U.S.C. 4332, and implementing regulations, 38 FR 20562, August 1, 1973, require an Environmental Impact Statement be prepared and circulated on:

(i) The environmental impact of the proposed action,

(ii) Any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) Alternatives to the proposed action,

(iv) The relationship between local, short-term uses of man's environment and the maintenance of enhancement of long-term productivity, and

(v) Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

(42 U.S.C. 4332 [C])

It is anticipated that such Environmental Impact Statements will be prepared by the Secretary, primarily on the basis of an environmental impact assessment and other relevant data, prepared and submitted by the individual States.

3. Several suggestions were made that the seven representative factors listed under § 920.13 be expanded to include renewable resource lands. The commentators expressed concern that this important area in the coastal ecosystem was not specifically identified. As a result of the concern expressed by the commentators, renewable resource lands are included in the list of representative factors which will assist in the designation of certain areas as being areas of particular concern.

4. The requirement that a "more comprehensive management program design" be submitted within 120 days after approval of the grant application has been amended under § 920.45(d). The final guidelines require that the management program design be submitted at the same time as the application for the initial grant. The reason for the above change is that the 120-day delay is not necessary and would serve as a potential source of confusion to the applicants.

5. Several comments received pertaining to § 920.14 recommended that NOAA emphasize the point that institutional questions should be raised early in the overall process. Commentators expressed concern that waiting until all the "technical work" is completed and the "plan" developed to consider the institutional vehicles for implementation would be a mistake that could forseeably delay the implementation of the plan. As a result of the comments received, language has been inserted to encourage the States to determine at an early stage whether or not legislation is needed.

6. There appeared to be general misunderstanding of the Public Hearing requirements cited under § 920.31. In order to clarify this section it has been rewritten. The present section emphasizes that "the key to compliance with the provisions of the Act is the assurance that the public has had an adequate opportunity to participate in the development of the plan."

7. Several comments received indicated a lack of understanding by several commentators as to the exact meaning of "segmentation" under § 920.44. To eliminate any misinterpretation, the term "geographic" has been inserted before the terms "segment and segmentation" as they appear in §920.44.

8. One commentator expressed concern over § 920.45(f) which required that where "a State chooses to reject (completed and approved regional and local) plans, it should be prepared to justify its actions as part of the management program." The above language has been amended to require a State "to advise the local government wherein" "its plan is deficient," rather than to "justify" its actions. The commentator argued that it would be inappropriate to establish a burden of proof for the States when it disagrees with actions of a regional or local body created by the State.

9. Several suggestions were made that the 15-day limit under § 920.47 be expanded. On the basis of the comments submitted, the time limit was expanded

to "30 working days." One commentator believed that this would afford the Secretary greater time and opportunity to thoughtfully respond to State requests pursuant to this section.

Accordingly, having considered the comments received and other relevant information, the Secretary concludes by adopting the final regulations describing the procedure for application to receive development grants under section 305 of the Act, as modified and set forth below.

Effective date. November 29, 1973.

Dated: November 26, 1973.

ROBERT M. WHITE,
Administrator.

Sec.

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AUTHORITY: Sec. 305, Coastal Zone Management Act of 1972 (Pub. L. No. 92-583; 86 Stat. 1280).

Subpart A—General

§ 920.1 Policy and objectives.

(a) This part establishes guidelines on the procedures to be utilized by coastal States to obtain development grants under section 305 of the Coastal Zone Management Act of 1972, Pub. L. 92-583, 86 Stat. 1280, and sets forth policies for the development of coastal zone management programs.

(b) Coastal zone management programs developed by the States shall comply with the policy of the Act; that is, the program must give full consideration to ecological, cultural, historic, and esthetic values, as well as to needs for economic development.

§ 920.2 Definitions.

As used in this part, the following terms shall have the meanings indicated below:

(a) The term "Act" means the Coastal Zone Management Act of 1972, Pub. L. 92-583, 86 Stat. 1280.

(b) "Coastal zone" means the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal States, and includes transitional and intertidal areas, salt marshes, wetlands, and beaches. The zone extends, in Great Lakes waters, to the international boundary between the United States and Canada and, in other areas, seaward to the outer limit of the U.S. territorial sea. The zone extends inland from the shorelines only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters. Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion or which is held in trust by the Federal Government, its officers or agents.

(c) "Coastal waters" means (1) those waters, adjacent to the shorelines, which contain a measurable quantity or percentage of seawater, including but not limited to, sounds, bays, lagoons, bayous, ponds, and estuaries; and (2) in the Great Lakes area, the waters within the territorial jurisdiction of the United States consisting of the Great Lakes, their connecting waters, harbors, roadsteads, and estuary-type areas such as bays, shallows, and marshes.

(d) "Coastal State" means a State of the United States in, or bordering on, the Atlantic, Pacific, or Arctic Ocean, the Gulf of Mexico, Long Island Sound, or one or more of the Great Lakes. For the purposes of these guidelines, the term also includes Puerto Rico, the Virgin Islands, Guam, and American Samoa.

(e) "Estuary" means that part of a river or stream or other body of water having unimpaired connection with the open sea, where the seawater is measurably diluted with freshwater derived from land drainage. The term includes estuary-type areas of the Great Lakes.

(f) "Secretary" means the Secretary of Commerce or his designee.

(g) "Management program" includes, but is not limited to, a comprehensive statement in words, maps, illustrations, or other permanent media of communication, prepared and adopted by the State in accordance with the provisions of these guidelines, setting forth objectives, policies, and standards to guide and regulate public and private uses of lands and waters in the coastal zone.

(h) "Water use" means activities which are conducted in or on the water within the coastal zone.

(i) "Land use" means activities which are conducted in or on the shorelands within the coastal zone.

§ 920.3 Applicability of air and water pollution control requirements.

Notwithstanding any other provisions of this part, nothing in this part shall in any way affect any requirement (a) established by the Federal Water Pollution Control Act, as amended, or the Clean Air Act, as amended, or (b) established by the Federal Government or by any State or local government pursuant to such Acts. Such requirements shall be incorporated in any program developed pursuant to these guidelines and shall be the water pollution control and air pollution control requirements applicable to such program.

Subpart B—Content of Management Programs

§ 920.10 General.

(a) The guidelines for section 305 of the Act have been structured to parallel the language and sequence of requirements in the Act. This approach has been followed to facilitate references to the Act. It is not required that this sequence be rigorously followed in developing the management program and in carrying out the specific tasks contained therein. It is anticipated and acceptable that the approach taken for development of programs will vary. These guidelines should not be interpreted as limiting State approaches or the contents of their management development grant applications.

(b) Section 305(b) required the inclusion of six elements in the initial development of State coastal zone management programs. These minimum requirements are set forth below with accompanying commentary that is designed to guide State responses to these key provisions of the management program development grant effort.

(c) It is anticipated that an environmental impact statement will be prepared and circulated on a State's management program prior to its approval by the Secretary of Commerce, in accordance with the terms of the National Environmental Policy Act and its associated administrative regulations. The Secretary will prepare and circulate an environmental impact statement on the basis of an environmental impact assessment and other relevant data, prepared and submitted by the individual States.

§ 920.11 Boundaries of the coastal zone.

Section 305(b)(1) requires the management program to include "an identification of the boundaries of the coastal zone subject to the management program." The definition of the coastal zone in the Act recognizes that no single geographic definition will satisfy the management needs of all coastal States, because designation of the coastal zone for management purposes must take into account the diverse natural, institutional, and legal characteristics that are subject to decisions made in fulfillment of other requirements of the Act and this subpart. Determination by a State of the extent of the coastal zone of that State land-

ward from the shoreline presents a very important conceptual and operational issue for State study, analysis, and decision. The following factors should be considered:

(a) In order to develop an orderly and effective management program, States my wish initially to delineate a planning area which generally is larger than, and encompasses the area ultimately identified as the coastal zone. Such a two-step procedure would enable a State to undertake planning studies and policy development for a relatively broad region aimed at a later final determination of the smaller coastal zone where specific land and water use controls, regulations, and active management activities will be applied. Demographic, economic, developmental, and biophysical factors and their analysis, which will largely determine State management activities in coastal waters and the landward and seaward areas and uses affecting them, are likely to be based upon data, programs, and institutional boundaries (such as counties or areawide agencies) that encompass geographic areas larger than the coastal zone designation. Specific coastal zone programming and regulation must take into account current developmental, political, and administrative realities, as well as biophysical processes, that may be external to the restricted zone eventually selected for direct management control.

(b) The coastal zone for management purposes extends inland only "to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters." However, the States are encouraged to take early and continuing account of existing Federal and State land/water use and resource planning programs. In addition, States may wish to anticipate a national land-use policy, including its application in their State, unless the State coastal zone management program applies to the entire State. States may also wish to anticipate the desired coordination between the coastal zone and proposed land use or broad resource management programs. Examples of some related statewide policies and programs which will affect and should be considered in making determinations under the Act include: Energy policy, siting of power plants and other major water-dependent facilities, surface and subsurface mineral extraction controls, overall land and water conservation policies, and many others.

(c) Lands the use of which are by law subject solely to the discretion of, or which are held in trust by the Federal Government, its officers or agents are excluded from the coastal zone. However, section 307(c) of the Act requires Federal agencies conducting or supporting activities in the coastal zone to conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved State management programs. Furthermore, before the Secretary can approve a management program, he is required under section 307(b) to consider the views of Federal agencies principally affected by the management program. States having excluded Federal lands in coastal zone must indicate the manner in which they will coordinate with Federal officials administering such lands in the development of their management program.

§ 920.12 Permissible land and water uses which have a direct and significant impact on coastal waters.

Section 305(b)(2) of the Act requires that the management program include "a definition of what shall constitute permissible land and water uses within the coastal zone which have a direct and significant impact on coastal water." In determining permissible uses, States should give consideration to "requirements for industry, commerce, residential development, recreation, extraction of mineral resources and fossil fuels, transportation and navigation, waste disposal, and harvesting of fish, shellfish, and other living marine resources." As stated in the declaration of congressional policy, these uses are to be managed "giving full consideration to ecological, cultural, historic, and esthetic values as well as to needs for economic development." Developing indices for determining environmental and economic impact—beneficial, benign, tolerable, adverse—is the first essential analytical and policy step needed to give substance and clarity to those uses which are "permissible." Some of the factors involved in this determination include location, magnitude, the nature of impact upon existing natural or man-made environments, economic, commercial, and other "triggering" impacts, and land and water uses of regional benefit. In responding to this requirement, therefore, the following general types of study and evaluation should be undertaken utilizing existing data and available analysis where possible:

(a) Determining criteria and measures to assess the impact of existing, projected, or proposed uses or classes of uses on the identified coastal environments;

(b) Categorizing the nature, location, scope, and conflicts of current and anticipated coastal land and water use or classes of uses;

(c) A continuing compilation, verification, and assessment of the general characteristics, values, and interrelationships within coastal land and water environments.

In establishing permissible uses, States must also be cognizant of the requirement in section 306(c)(8) of the Act that the management program must provide "for adequate consideration of the national interest involved in the siting of facilities necessary to meet requirements which are other than local in nature." The State must have adequate processes for providing such adequate consideration.

§ 920.13 Geographic areas of particular concern.

Section 305(b)(3) of the Act requires that the management program include "an inventory and designation of areas of particular concern." The inventory and analysis of the States' total costal zone in § 920.12 should provide the basic data analysis, and criteria necessary to identify specific geographic areas of particular concern. It should be noted that geographic areas of particular concern are likely to encompass not only the more-often cited areas of significant natural value or importance, but also: (a) Transitional or intensely developed areas where reclamation, restoration, public access and other actions are especially needed; and (b) those areas especially suited for intensive use or development. In addition, immediacy of need should be a major consideration in determining particular concern. While the States will vary in their perceptions of what areas are of particular concern, criteria derived from assessing the following representative factors will assist in these designations:

(1) Areas of unique, scarce, fragile, or vulnerable natural habitat, physical feature, historical significance, cultural value, and scenic importance;

(2) Areas of high natural productivity or essential habitat for living resources, including fish, wildlife, and the various trophic levels in the food web critical to their well-being;

(3) Areas of substantial recreational value and/or opportunity;

(4) Areas where developments and facilities are dependent upon the utilization of, or access to, coastal waters;

(5) Areas of unique geologic or topographic significance to industrial or commercial development;

(6) Areas of urban concentration where shoreline utilization and water uses are highly competitive;

(7) Areas of significant hazard if developed, due to storms, slides, floods, erosion, settlement, etc.; and

(8) Areas needed to protect, maintain or replenish coastal lands or resources, such areas including coastal flood plains, aquifer recharge areas, sand dunes, coral and other reefs, beaches, offshore sand deposits, and mangrove stands.

This inventory and designation of geographic areas of particular concern will be of assistance in meeting the requirement in section 306(c)(9) of the Act which requires that the management program "make provision for procedures whereby specific areas may be designated for the purpose of preserving or restoring them for their conservation, recreational, ecological, or esthetic values."

§ 920.14 Means of exerting State control over land and water uses.

Section 305(b)(4) of the Act requires that the management program include "an identification of the means by which the State proposes to exert control over land and water uses referred to in (§ 920.12) including a listing of relevant constitutional provisions, legislative enactments, regulations, and judicial decisions." A fundamental purpose of this legislation is to broaden the perspective by which decisions affecting the coastal zone are made to incorporate a statewide view. Congress in section 306(e) provided

three methods by which a State might carry out its management responsibilities in an acceptable manner. Section 306(e) of the Act provides:

(a) Prior to granting approval, the Secretary shall also find that the program provides:

(1) For any one or a combination of the following general techniques for control of land and water uses within the coastal zone:

(i) State establishment of criteria and standards for local implementation, subject to administrative review and enforcement of compliance;

(ii) Direct State land and water use planning and regulation; or

(iii) State administrative review for consistency with the management program of all development plans, projects, or land water use regulations, including exceptions and variance thereto, proposed by any State or local authority or private developer with power to approve or disapprove after public notice and an opportunity for hearings.

It is for the several States to determine the appropriate role of local governments in administering its coastal zone program. The Act recognizes that local governments are closest to those who will be most affected by a management program and that many sub-State units often can make a useful contribution to the development of the program. Section 306 requires that: Local governments and other interested public and private parties must have an opportunity for full participation in the development of the management program; the State has coordinated with local, areawide, and interstate plans; and, the State has established an effective mechanism for continuing consultation and coordination with local governments and other units to insure their full participation in carrying out the management program (e.g., advisory councils composed of representatives of local government).

(b) Some of the issues to be addressed in identifying the means by which a State will propose to exert its control include:

(1) Whether existing State powers and authority are sufficient to exert one of the three alternative means of control specified in section 306(e);

(2) What specific modifications or strengthened mandates would be needed to qualify the State under section 306(d) and (e);

(3) Whether a shared State-local or State-areawide regional consolidated regulatory system should be established.

It is important that the States determine at an early stage whether legislation is needed, and identify the elements of that legislation to meet the requirements in section 306(d) and (e). This requires that the State, acting through its chosen agency or agencies, including local governments, areawide agencies designated under section 204 of the Demonstration Cities and Metropolitan Development Act of 1966, regional agencies, or interstate agencies, have authority for the management of the coastal zone in accordance with the management program. Such authority shall include power—

(i) To administer land and water use regulations, control development in order to insure compliance with the management program, and to resolve conflicts among competing uses; and,

(ii) To acquire fee simple and less than fee simple interests in lands, waters, and other property through condemnation or other means where necessary to achieve conformance with the management program.

The required listing of relevant constitutional provisions, legislative enactments, regulations and judicial decisions will, of course, be one foundation for analyzing and making decisions concerning the above issues and alternatives. In order to undertake the kinds of work outlined above, however, it will be necessary to go beyond a mere listing by preparing an assessment of current legal constraints or prohibitions, needed executive or legislative initiatives, and where required, to prepare the elements of any legislative program needed to establish a comprehensive and effective management program. There is room to exercise strengthened design and management imagination and creativity under this program for coastal zone management. While past research and planning efforts have often been limited by existing law, policy and practices, the Act encourages creative approaches to action programs for orderly development, and preservation or restoration of areas within the coastal zone for their conservation, recreational, ecological or esthetic values. Thus, the States are encouraged to consider innovative techniques or strategies that are now being tested and utilized both in the United States and elsewhere that they deem suitable to their management needs.

§ 920.15 Designation of priority uses within specific geographic areas throughout the coastal zone.

Section 305(b)(5) of the Act requires that the management program include "broad guidelines on priority of uses in particular areas including specifically those uses of lowest priority." This required element is closely tied to the requirements in §§ 920.12 and 920.13 and should build upon the States' findings and conclusions reached concerning "permissible uses" and areas of "particular concern." These decisions should assist the State in establishing preferred uses tailored to specific areas in its coastal zone. Priority guidelines will serve three essential purposes:

(a) To provide the basis for regulating land and water uses in the coastal zone;

(b) To provide the State, local governments, areawide/regional agencies, and citizens with a common reference point for resolving conflicts, and

(c) To articulate the States' interest in the preservation, conservation, and orderly development of specific areas in its coastal zone.

It should be noted that States will be expected to utilize all available information relating to characteristics of the coastal zone when planning for specific uses. For example, data on flood inundation at 100-year intervals should be examined to determine the feasibility or wisdom of construction on affected sites.

§ 920.16 Organizational structure to implement the management program.

Section 305(b)(6) requires a management program to include: "A description of the organizational structure proposed to implement the management program, including the responsibilities and interrelationships of local, areawide, State, regional and interstate agencies in the management process." One essential element of the organizational structure is the requisite State involvement in land and water use decisions in the coastal zone as set forth in § 920.14. Another, is the process of coordination by the State with local, areawide, regional and interstate agencies, in the development and administration of the management program. Guidance with respect to organizational structure is provided in section 306(c) which requires that the Secretary, prior to granting approval of a management program, find that:

(a) *The State has*—

(1) Coordinated its program with local, areawide, and interstate plans applicable to areas within the coastal zone existing on January 1 of the year in which the State's management program is submitted to the Secretary, which plans have been developed by a local government, an areawide agency designated pursuant to regulations established under section 204 of the Demonstration Cities and Metropolitan Development Act of 1966, a regional agency, or an interstate agency; and

(2) Established an effective mechanism for continuing consultation and coordination between the management agency designated (by the Governor) and with local governments, interstate agencies, regional agencies, and areawide agencies within the coastal zone to assure the full participation of such local governments and agencies in carrying out the purposes of this Act.

(b) The management program and any changes thereto have been reviewed and approved by the Governor.

(c) The Governor of the State has designated a single agency to receive and administer the grants for implementing the management program.

(d) The State is organized to implement the management program required under paragraph (d)(1) of this section. Based on policies, management approaches, technical data, priorities and existing or potential powers and authorities developed by the State in §§ 920.11 through 920.15, the critical issues of organizational structure, administrative responsibilities and institutional arrangements must be resolved. While a detailed institutional structure for achieving the Act's objectives cannot be specified in advance of development of the management program, the agency designated, or to be designated, by the Governor to re-

ceive and administer management grants should have:

(1) Authority to correlate the activities of all State, local, areawide/regional or other entities in the coastal zone;

(2) Appropriate access to the Governor; and

(3) Requisite powers set forth in section 306 of the Act.

In addition, States should strengthen cooperative mechanisms for State-Federal consultation in key mutual areas of concern, particularly where Federal activities affect the coastal zone. Section 306 requires that the management program provide for a method of assuring that local land and water use regulations within the coastal zone do not unreasonably restrict or exclude land and water uses of regional benefit. Cooperation among the various State and regional agencies including establishment of interstate and regional agreements, cooperative procedures, and joint action, particularly regarding environmental problems and resource development in the national or regional interest, is encouraged.

Subpart C—Research and Technical Support

§ 920.20 General.

(a) It is clear that the process of developing (and operating) a management program for the coastal zone will necessarily involve frequent access to informational and research sources. In many cases, adequate understanding of questions such as dune stabilization, barrier beach dynamics, salt marsh productivity and estuarine circulation and flushing, to mention only a few, will be needed in order to develop successful management programs. Also, the process of inventorying and mapping the nature of a State's zone, and designation of areas of particular concern almost certainly will benefit from the application of technologies such as those employing remote sensing.

(b) A substantial number of sources for such information exist within Federal agencies, in universities, in State and Federal laboratories and research centers, and in the private sector. NOAA's Office of Coastal Environment, with the assistance of the Environmental Data Service, will endeavor to serve generally as a clearinghouse for specialized coastal zone technical information, and will issue pertinent publications on appropriate technical support available at least from Federal sources.

(c) Because some features of the coastal zone remain incompletely understood, States may find it necessary to act without all of the basic technical information that they require. The Office of Coastal Environment intends to identify unsolved coastal research problems and will seek to facilitate their solution. Monitoring programs established as part of the development of a management program may also, if properly designed, produce data which can be used to elucidate important coastal zone phenomena.

(d) It should be pointed out that the primary emphasis of the coastal zone management program is to create the mechanism for States to exert appropriate control over land and water uses and to begin the management process, not to engage in long-term research projects. Applications for management program development grants which contain substantial research elements will be carefully reviewed to assure that these elements are essential to the successful development of a State's management program and are an integral part of a comprehensive review of existing information relating to the management program. Clearly, the nature of this program will give preference to and encourage research in such applied activities as resource surveys, inventories, and determination of environmental carrying capacities.

(e) In developing their management programs, States should always endeavor to locate and utilize existing information and research sources to the extent applicable and available rather than undertaking unnecessary independent research or information gathering, as part of program development effectiveness. In this respect, the Office of Coastal Environment should ordinarily be initially contacted to ascertain what information and assistance it can provide.

§ 920.21 Approaches to research activities.

In addition to taking full advantage of the various sources of technical information found within the individual States, the States will also find that one of the important sources of technical information will be the various components of NOAA which support ongoing programs in coastal research and mapping, physical oceanography, and hydrography. Those elements of NOAA which States may wish to contact for assistance include:

(a) Office of Sea Grant: Supports a large program of university research aimed largely at coastal zone-related problems. Contact Office of Sea Grant, Pennsylvania Building, 425 13th Street NW., Washington, D.C.

(b) National Ocean Survey: Conducts a substantial inhouse effort on coastal mapping and charting, geodesy, hydrography, and related subjects. Contact National Ocean Survey, National Oceanic and Atmospheric Administration, Rockville, Md. 20852.

(c) National Marine Fisheries Service: Undertake biological and ecological research and other programs relevant to commercial and sport fisheries of all types. Contact National Marine Fisheries Service, Page Building 2, 3300 Whitehaven Street NW., Washington, D.C.

(d) Environmental Data Service: Monitors large quantities of environmental data of all types, including weather, oceanographic and earth sciences. Includes National Oceanic Data Center. Contact Environmental Data Service, National Oceanic and Atmospheric Administration, Page Building 2, 3300 Whitehaven Street NW., Washington, D.C.

(e) Environmental Research Laboratories: Conduct a wide ranging research program in the ocean and atmospheric sciences. Contact Environmental Research Laboratories, National Oceanic and Atmospheric Administration, Boulder, Colo. 80302.

(f) Office of Coastal Environment: Contains responsibility for administration of the Coastal Zone Management Act as well as a number of coastal environmental studies and manned underwater activity programs. Contact Office of Coastal Environment, National Oceanic and Atmospheric Administration, Rockville, Md. 20852.

(g) Other sources of information and resourses are:

(1) Research carried on by or for the U.S. Army Corps of Engineers;

(2) The Environmental Protection Agency has information on environmental programs and water quality studies and could be consulted for technical information and assistance in environmental pollution control problems and techniques;

(3) Department of Housing and Urban Development research program;

(4) Office of Water Resources Research, U.S. Department of the Interior;

(5) National Science Foundation—Research Applied to National Needs; and

(6) U.S. Geological Survey water and minerals resources investigations.

(h) In addition to the research activities cited above, there are many ongoing programs conducted by agencies at the State and Federal level which can provide technical assistance and should be utilized where appropriate. Inasmuch as further effort will be made to identify relevant Federal program, they are not described in detail here. They are, however, housed in such Federal agencies as:

Regional Economic Development Commissions,
Soil Conservation Service,
U.S. Geological Survey,
National Aeronautic and Space Administration,
Atomic Energy Commission,
Water Resources Councils and Associated River Basin Commissions.

(i) Finally, it is important to establish and maintain a relationship with the research community, designers, planners, decisionmakers, and managers. Because applied and basic research will be a continuing need in coastal zone management, States should review and develop explicit statements of their research needs and strengthen their contacts and involvement with the private and public research community, by taking a lead role in determining research and technical assistance priorities, continuing mutual project development activities and translation of scientific findings into information useful for managers.

Subpart D—Public Participation

§ 920.30 General.

Public participation is an essential element of development and administration of a coastal zone management program. Through citizen involvement in the development of a management program, public needs and aspirations can be reflected in use decisions for the

coastal zone, and public support for the management program can be generated. Participating States, therefore, should seek to obtain extensive public participation in the development and administration of a coastal zone management program.

§ 920.31 Public hearings.

Section 306(c)(3) of the Act requires that public hearings be held in the development of the management program.

(a) *Notice.* Notification of public hearing should provide the public the longest period of notice practical, but in no event should notice less than the 30-day statutory minimum be provided. Announcement of the hearings should be through media designed to inform the public—not merely to provide "technical notice." Therefore, in addition to any publication of legal notice as required by State law, reasonably informative news releases should be made available to the news media in the affected communities.

(b) *Access to document.* At the time of the announcement, all agency materials pertinent to the hearings, including documents, studies, the agenda for the hearing, and other data, must be made available to the public for review and study in the locale where the hearings are to be conducted.

(c) *Number of hearings.* Where a State has determined that a public hearing or hearings will be held only on the entire plan, it shall assure that the public is afforded an adequate opportunity to participate in the hearings.

Where a portion of the plan has been developed prior to the effective date of this Act, the requirement for public hearings under this Act shall be satisfied if the State shows that hearings complying with requirements of this section have been held on such earlier developed portions of the plans, or if the State provides a full opportunity for public hearings on the plan prior to submission of the plan for approval under section 306. In reviewing the plan submitted by a State, the Secretary will not approve any plan unless there has been a full and effective opportunity for public involvement in every portion of the plan. The key to compliance with the provisions of the Act is the assurance that the public has had an adequate opportunity to participate in the development of a plan. More than one public hearing on the plan is not required: *Provided,* That a hearing is conducted prior to final adoption of the plan and members of the public are given adequate notice of the hearing and a full opportunity to effectively participate and make their views known at such a hearing.

(d) *Location of hearings.* Hearings should be held in those geographic areas which would be principally affected by the decisions on issues under consideration at the hearing, e.g., establishment of priority uses for a given geographic area. Hearings on the total management program should be held in places within the State where all citizens of the State may have an opportunity to comment.

(e) *Timing of hearings.* In many cases, the population of the coastal zone fluctuates significantly with the seasons of the year. Efforts should be made to insure that hearings are held when those populations most likely to be affected are present.

(f) *Report.* A verbatim transcript of the hearings need not be prepared but a comprehensive summary should be prepared and made available to the public within 30 days after the conclusion of the hearing. A copy of these summaries shall accompany the management program when it is submitted to the Secretary for approval.

§ 920.32 Additional means of public participation.

Formal public hearings may not provide an adequate opportunity for information exchange. To insure that the public is heard during the development of the program, efforts should be made to encourage discussion in various forums of the subject matter of the hearings and to take other steps to insure that the public can participate in the process in a meaningful manner. The following are suggested to accommodate increased public participation:

(a) Establish arrangements for exchanging information, data, and reports, among State and local government agencies, citizen groups, special interest groups, and the public at large, throughout the development and administration of the coastal zone program.

(b) The State should provide, after notice, the opportunity of participation by relevant Federal agencies, State agencies, local organizations, port authorities and other interested parties both public and private.

(c) Develop mechanisms in addition to public hearings to allow citizens and the public at large to effectively participate in the coastal zone program. The following are examples of some of the components that may be used in the participation process:

(1) Citizen involvement in the development of the goals and objectives.

(2) Citizen appointment by the agency to a Citizen Advisory Committee.

(3) Establishment of processes to review component elements of the management program by selected citizen groups and the general public.

Subpart E—Applications for Development Grants

§ 920.40 General.

(a) The primary purpose of the development grant is to assist States in developing a comprehensive management program for their coastal zone. While the majority of the responsibility for developing a management program resides with the State, a State is permitted to allocate a portion of its grant to sub-State entities, or multi-State organizations, to assist in the development of a management program. At the discretion of the State and with the approval of the Secretary, a management program may be developed and adopted in geographical segments so that immediate attention may be devoted to those areas within the coastal zone which most urgently need management programs: *Provided,* That the State adequately provides for the ultimate coordination of the various geographical segments of the management program into a single unified program and that the unified program will be completed as soon as is reasonably practicable. Grants given to the State must be expended for the development of a management program that meets the requirements of the Act. The grants shall not exceed two-thirds of the costs of the annual programs. Federal funds received from other sources cannot be used to match these grants. No more than three annual management program development grants can be awarded to a State.

(b) *Section 305(c) of the Act provides:*

In order to qualify for grants under this section, the State must reasonably demonstrate to the satisfaction of the Secretary that such grants will be used to develop a management program consistent with the requirements set forth in section 306 of the Act. After making the initial grant to a coastal State, no subsequent grant shall be made under this section unless the Secretary finds that the State is satisfactorily developing such management program.

§ 920.41 Administration of the program.

The Congress assigned the responsibility for the administration of the Coastal Zone Management Act of 1972 to the Secretary of Commerce, who has designated the National Oceanic and Atmospheric Administration as the agency in the Department of Commerce to manage the program. NOAA has established the Office of Coastal Zone Management for this purpose. Requests for information on grant applications and the applications themselves should be directed to:

Director, Office of Coastal Environment, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Rockville, Md. 20852.

§ 920.42 State responsibility.

(a) Applications for initial development grants must be submitted by the Governor of a coastal State or his designee.

(b) The application shall designate a single State official, agency, or entity, to receive development grants and have responsibility for the development of the State's coastal zone management program. The designee need not necessarily be that agency which will be designated by the Governor under the provisions of section 306(c)(5) of the Act as the single agency to receive and administer the grants for implementing the management program.

(c) A single State application will cover all program development activities, whether carried out by State agencies, areawide/regional agencies, local governments, regional or interstate entities.

§ 920.43 Allocation.

Section 305(g) allows a State to allocate a portion of its development grant to sub-State or multi-State entities. States must insure, in the development of the management program, that they de-

velop sufficient capability to administer the coastal zone management programs they are developing. If the State intends to allocate a portion of its grant, the application for a development grant shall set forth the manner in which a State plans to allocate any portion of its grant to sub-State units, multi-State units, or any other allocation. Requests for allocation will not be approved unless it is clearly demonstrated that the State is developing sufficient capabilities, and the work to be accomplished as the result of such allocations is integrated into the State's coastal zone management program development effort and will clearly contribute to the development of effective applications of State's policy in the coastal zone.

(a) *Areawide / Regional agencies.* Should the application indicate the desire of the State to allocate a portion of its management program development grant to an areawide/regional agency under the provisions of section 305(g) of the Act, in the absence of State law to the contrary, preference shall be given to those agencies recognized or designated as areawide/regional comprehensive planning and development agencies under the provisions of Office of Management and Budget circular No. A–95, under section 204 of the Demonstration Cities and Metropolitan Development Act of 1966 or Title IV of the Intergovernmental Cooperation Act of 1968. The provisions of part IV, OMB circular No. A–95 dealing with the "Coordination of Planning in Multijurisdictional Areas" apply to the areawide/regional agencies designated as recipients of management program development grants under this Act.

(b) *Local government.* Should the application indicate the desire of the State to allocate a portion of its management program development grant to a local government under the provisions of section 305(g) of the Act, units of general-purpose local government are preferred rather than special-purpose units of local government, as provided in section 402 of the Intergovernmental Cooperation Act of 1968.

(c) *Interstate agencies.* At the discretion of two or more Governors of adjacent or related coastal States, coordinated management programs or research and planning efforts may be developed leading to the establishment of management programs for such interstate or multi-State areas. Such proposals for interstate cooperation and action shall be set forth in the application for each State together with the interstate funding arrangements proposed for the joint work. The States involved may designate interstate compact agencies, Regional Action Planning Commissions, river basin commissions, or an interstate areawide/regional planning agency to accomplish the management program development work for the coastal zone management area within each jurisdiction as they see fit. Applications for interstate management program development grants will not be accepted directly from interstate or multi-State agencies, but only from the individual States involved in the joint program.

§ 920.44 Geographical segmentation.

Authority is provided in the Act for a State's management program to be "developed and adopted in segments so that immediate attention may be devoted to those areas within the coastal zone which most urgently need management programs." Request by a State to develop and adopt a program in geographical segments is subject to the additional proviso that the State "adequately provides for the ultimate coordination of the various geographical segments of the management program into a single unified program and that the unified program will be completed as soon as it is reasonably practicable." Undue geographical segmentation creates the possibility of continuing the status quo without creating a comprehensive management program.

§ 920.45 Application for the initial grant.

The application for the initial development grant shall include but not be limited to:

(a) Identification of the designated official, the State agency or entity designated by the Governor to prepare and submit the State's management program and receive its development grant as well as the legal authority or other basis under which the lead agency or entity operates. It shall also indicate what other State agencies may be involved in the development of the management program and, if the State desires to allocate a portion of its grant to other governmental units, it should identify those units and set forth the work proposed to be accomplished by each unit so identified.

(b) A summarization of the State's past and current activities in its coastal zone, the current status of coastal zone management, and other activities.

(c) A discussion and ranking by general order of importance of the major coastal zone related problems and issues facing the State, as well as identification of the goals and objectives the State hopes to achieve by development of its coastal zone management program.

(d) A management program design detailing the work to be accomplished in the development of the State's coastal zone management program. The management program design serves as an outline for the State's plan of action for developing a management program and should include a projection of how the State will seek to meet the requirements set forth in subpart B of this part. In addition, the management program design should include:

(1) An identification of existing information and sources of information;

(2) A projection as to additional information which must be acquired;

(3) A description of methods to insure public participation;

(4) A description of the intergovernmental process by which the State intends to involve various levels of government in the development and implementation of the management program;

(5) A mechanism for coordination with agencies administering excluded Federal lands that are in the coastal land; and

(6) A tentative approximation of the boundaries of the State's coastal zone.

(e) Submission of an annual work program consisting of a precise statement of what is intended to be accomplished during the year. Such a statement will include:

(1) Identification of the plans, programs and studies to be produced.

(2) Definition of the major tasks needed to produce the plans, programs and studies.

(3) For each task, the following should be specified:

(i) Approach and techniques to be used,

(ii) Data and studies already available,

(iii) Manpower requirements,

(iv) Time schedule,

(v) Costs, and

(vi) Source of funds.

(f) Identification of any other State and Federal planning, programming, or activity which may have a significant impact on the State's coastal zone. Such planning, programming or activities includes work accomplished or to be undertaken by any State, areawide, local, regional or interstate agencies funded, in part or in total, by State or local money, with or without Federal assistance. Completed and officially approved regional and local plans provide invaluable input and guidance in the development of a State's coastal zone management program. It should be pointed out that where a State chooses to reject such plans, it should advise the local government wherein its proposed plan is deficient and clarify what needs to be done to correct the deficiency. The objective of this provision is to seek and achieve as complete coordination and integration as possible at the State level of all local, State and Federal programs that lead to the setting of policy or the development of public and private works, facilities or programs in the State's defined coastal zone. The Act provides in section 307(c)(1) that: "Each Federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is to the maximum extent practicable, consistent with approved State management programs." To this end, the application shall reflect, and the developed coastal zone management program will provide, methods to integrate the following types of programs and activities as they affect the coastal zone of the state: (1) Federally assisted planning development and management programs, such as but not limited to (the program numbers and titles listed below are those contained in the 1972 Catalog of Federal Domestic Assistance as published by OMB):

PUBLIC LAW REFERENCE		
Pub. L. 87-703; 91-343; 74-46.	Resource Conservation and Development.	(10.901)
Pub. L. 83-560...	Comprehensive Planning Assistance.	(14.203)
Pub. L. 88-578...	Outdoor Recreation State Planning.	(15.401)
Pub. L. 89-304; 91-249.	Anadromous Fish Conservation.	(15.600)
	Fish Restoration	(15.605)
	Wildlife Restoration	(15.611)
Pub. L. 74-292...	Historic American Buildings Survey.	(15.903)
Pub. L. 89-665...	Historic Preservation	(15.904)
Pub. L. 91-258...	Airport Planning Grant Program.	(20.103)
Pub. L. 90-495; 91-605; 89-574.	Highway Research Planning and Construction.	(20-205)
Pub. L. 91-453; 88-365.	Urban Mass Transportation Technical Studies Grants.	(20-505)
Pub. L. 89-80....	Water Resources Planning	(65.001)
	Air Pollution Survey and Demonstration Grants.	(66.005)
	Solid Waste Planning Grants.	(66.301)
	Water Pollution Control Comprehensive Planning Grants.	(66.401)
Pub. L. 88-206; 89-272; 89-675; 90-148; 91-604.	Air Pollution Survey and Demonstration Grants.	(66.005)
Pub. L. 92-500...	Water Quality Management Technical Planning Assistance.	(66.023)
Pub. L. 89-272; 91-512; 93-14.	Solid Waste Technical Assistance, Training and Information Services.	(66.304)
Pub. L. 92-583...	Marine Protection Research and Sanctuaries.	

(2) Public works land acquisition and development projects conducted, proposed to be conducted, proposed to be conducted or assisted by a Federal agency, authorized and financed outside of the Federal programs listed above, such as activities conducted with respect to rivers and harbors, small watershed development, wastewater collection and treatment facilities, military reservations, wildlife refuges, park and recreation areas, improvements in navigation, flood control and so forth;

(3) Any Federally supported national land use program which may be hereinafter enacted as specified in section 307 (g) of the Act;

(4) Activities in the coastal zone stemming from the Rural Development Act of 1972;

(5) State programs dealing with land use controls in the coastal zone or other regulatory, licensing, permit or operating programs in the coastal zone including, but not limited to, activities such as mineral extracting, power plant siting and harbor construction.

§ 920.46 Approval of applications.

(a) The Secretary shall approve any application which he finds complies with policy and requirements of the Act and these guidelines.

(b) Should the Secretary determine that an application is deficient, he shall notify the applicant in writing and set forth in detail the manner in which the application fails to conform to the requirements of the Act or this subpart. Conferences may be held on these matters. Corrections or other adjustments to the application will provide the basis for resubmittal of the application for further consideration and review.

(c) The Secretary may, upon finding of extenuating circumstances relating to applications for assistance, waive appropriate administrative requirements contained herein.

§ 920.47 Amendments.

Amendments to an approved development program must be submitted to, and approved by the Secretary prior to initiation of the change contemplated. Requests for substantial changes should be discussed with Federal officials well in advance. It is recognized that, while all amendments must be approved by the Secretary, most such requests will be relatively minor in scope; therefore, approval by the Secretary may be presumed for minor amendments if the State has not been notified of objections within 30 working days of date of postmark of the request.

§ 920.48 Applications for second year grants.

(a) Second year development grant applications will follow the procedures set forth in § 920.45: *Provided, however,* That the management program design and annual work program shall be updated to indicate the progress made toward the development of the State's coastal zone management program under the initial development grant and should in addition:

(1) Demonstrate how the past year's work activities and products contributed to the realization of management program development goals if such goals have not been fully realized. Either document the extent to which they have been met or present modified goals.

(2) Identify major constraints upon or problems encountered in establishing and implementing an adequate management program for the State.

(3) Reexamine and assess the development program's broad goals and measurable planning objectives; and

(4) Reexamine and, if necessary, revise management program design in light of emerging or continuing priority problems and opportunities.

(b) In evaluating whether a State is making satisfactory progress in the development of the management program to determine eligibility for the second year grant, the Secretary will consider among other things whether a State has completed:

(1) An analysis of the existing legal authority to exert control over land and water uses in the coastal zone;

(2) A description of the activities and authorities of the various agencies (State, local, regional, areawide or interstate) involved in activities or regulation of activities in the coastal zone; and

(3) An analysis of the existing or needed legal authorities with which the State believes it can insure compliance with coastal zone management program, resolve conflicts among competing uses, and acquire fee simple and less than fee simple interests in lands, waters, and other property through condemnation or other means when necessary to achieve conformance with the management program.

(4) This analysis will permit a State to determine what legislative action will be needed to qualify under section 306 of the Act. States may propose alternate standards of accomplishment for consideration by the Secretary in determining "satisfactory progress" towards completion of the management program.

§ 920.49 Application for third year grants.

(a) The general requirements set forth in paragraph (a) of § 920.46 shall apply to review of the application for the third year development grant.

(b) In evaluating whether a State is making satisfactory progress in development of the management program to determine eligibility for the third year grant, the Secretary will consider among other things whether a State has completed:

(1) Identification of the boundaries of the coastal zone;

(2) Development of a process by which permissible land and water uses having a direct and significant impact upon coastal waters can be defined; and

(3) Criteria for designating geographical areas of particular concern. Accomplishment of these tasks will put the State in a position to provide guidelines on priority of uses in particular areas and allow a State to complete development of its management program by the end of the third year. States may propose alternate standards of accomplishment for consideration by the Secretary in determining "satisfactory progress" toward completion of the management program.

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COASTAL ZONE MANAGEMENT PROGRAM ADMINISTRATIVE GRANTS

NOTICE OF FINAL RULEMAKING

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Title 15—Commerce and Foreign Trade

CHAPTER IX—NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

PART 923—COASTAL ZONE MANAGEMENT PROGRAM APPROVAL REGULATIONS

The National Oceanic and Atmospheric Administration (NOAA) on August 21, 1974, proposed guidelines (originally published as 15 CFR Part 923), pursuant to the Coastal Zone Management Act of 1972 (Pub. L. 92-583, 86 Stat. 1280), hereinafter referred to as the "Act," for the purpose of defining the procedures by which States can qualify to receive administrative grants under the Act.

Written comments were to be submitted to the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, before November 22, 1974, and consideration has been given these comments.

The Act recognizes that the coastal zone is rich in a variety of natural, commercial, recreational, industrial and esthetic resources of immediate and potential value to the present and future well-being of the nation. Present State and institutional arrangements for planning and regulating land and water uses in the coastal zone are often inadequate to deal with the competing demands and the urgent need to protect natural systems in the ecologically fragile area. Section 305 of the Act authorizes annual grants to any coastal State for the purpose of assisting the State in the development of a management program for the land and water resources of its coastal zone (development grant). Once a coastal State has developed a management program, it is submitted to the Secretary of Commerce for approval and, if approved, the State is then eligible under Section 306 to receive annual grants for administering its management program (administrative grants).

The regulations below set forth (a) criteria and procedures to be utilized in reviewing and approving coastal zone management programs pursuant to section 306 of the Act, and (b) procedures by which coastal States may apply to receive administrative grants under section 306(a) of the Act. The criteria and procedures under (a) constitute the "guidelines for section 306" referred to in 15 CFR 920.

The National Oceanic and Atmospheric Administration is publishing herewith the final regulations describing procedures for applications to receive administrative grants under section 306 of the Act. The final regulations and criteria published herewith were revised from the proposed guidelines based on the comments received. A total of thirty-two (32) States, agencies, organizations and individuals submitted responses to the proposed section 306 guidelines published in the FEDERAL REGISTER on August 21, 1974. Of those responses received, nine (9) were wholly favorable as to the nature and content of the guidelines as they appeared in the FEDERAL REGISTER on August 21, 1974. Twenty-three (23) commentators submitted suggestions concerning the proposed Section 306 guidelines.

The following analysis summarizes key comments received on various sections of the draft regulations and presents a rationale for the changes made:

1. Several commentators asserted that the guidelines did not adequately reflect the environmental considerations contained in the Act. No changes were made in response to these comments since the guidelines more than adequately reflect the environmental concerns in the legislation as evidenced in part by the comment section under § 923.4:

> Management programs will be evaluated in the light of the Congressional findings and policies as contained in Section 302 and Section 303 of the Act. These sections make it clear that Congress, in enacting the legislation, was concerned about the environmental degradation, damage to natural and scenic areas, loss of living marine resources and wildlife, decreasing open space for public use and shoreline erosion being brought about by population growth and economic development. The Act thus has a strong environmental thrust, stressing the 'urgent need to protect and to give high priority to natural systems in the coastal zone.

2. Several comments were received on the necessity of the Secretary of Commerce preparing and circulating an environmental impact statement on each individual State application as required by § 923.5. The National Environmental Policy Act, 42 USC 4332, and implementing regulations, 38 FR 20562, August 1, 1973, require an environmental impact statement be prepared and circulated on each individual State's application. An environmental impact statement shall be prepared on each individual State's application by the Secretary, primarily on the basis of an environmental assessment, and other relevant data, prepared and submitted by the individual States. This section was amended to reflect the requirement of the National Environmental Policy Act environmental impact statement requirements.

3. Several comments indicated that the States did not have a clear understanding as to what was meant under § 923.11 (b) (4) which refers to Federal lands subject solely to the discretion of, or which is held in trust by, the Federal government, its officers and agents. This section has been amended in order to provide a procedure for identifying those lands which are within the framework of this section.

4. Several commentators indicated that there was uncertainty as to what the requirements of the national interest were pursuant to § 923.15. This section has been amended in order to more succinctly state what the requirements are pursuant to this section and how a State must meet these requirements during the development and administration of its coastal zone management program. At the request of several commentators, several additions have been made to the list of requirements which are other than local in nature.

5. Several commentators indicated that § 923.26, which pertains to the degree of State control needed to implement a coastal zone management program, did not offer sufficient guidance in interpreting the legislation. In response to these comments, § 923.26 has been expanded to include specific examples of how a State may implement this section.

6. Comments received indicate there was some misunderstanding in interpreting § 923.43, which deals with geographical segmentation. This section has been substantially amended in order to indicate that the segmentation issue refers to geographical segmentation of a State's coastal zone management program. The requirements for a State to receive approval on a segmented basis are clearly set forth in the amendment to the regulations.

7. Extensive discussions have taken place with various elements of the U.S. Environmental Protection Agency (EPA) concerning the applicability of air and water pollution requirements to the development, approval and implementation of State management programs pursuant to § 923.44 of the proposed regulations. State coastal zone management programs have also been surveyed in order to determine current and anticipated problems, issues and opportunities associated with carrying out the requirements of section 307(f) of the Coastal Zone Management Act, and § 923.44 of the draft approval regulations. Consolidated EPA comments have been received, together with State reviews, and one comment from the private sector. Specific clarifications and changes as a result of these reviews are contained in §§ 923.4, 923.12, 923.32 and § 923.44 of these regulations.

8. One commentator objected to the amount of detail required in section 306 applications and the undue administrative burden proposed pursuant to Sub-

part F of the proposed regulations. The revisions attempt to both clarify and reduce those requirements, while still requiring sufficient information for the Office of Coastal Zone Management to approve management programs and make sound funding decisions.

Accordingly, having considered the comments and other relevant information, the Administrator concludes by adopting the final regulations describing the procedure for application to receive administrative grants under section 306 of the Act, as modified and set forth below.

Effective date: January 8, 1975.

Dated: January 6, 1975.

ROBERT M. WHITE,
Administrator, National Oceanic and Atmospheric Administration.

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AUTHORITY: 86 Stat. 1280 (16 U.S.C. 1451-1464).

Subpart A—General

§ 923.1 Purpose.

(a) This part establishes criteria and procedures to be employed in reviewing and approving coastal zone management programs submitted by coastal States and for the awarding of grants under Section 306 of the Act.

(b) The Act sets forth in sections 305, 306 and 307 a number of specific requirements which a management program must fulfill as a condition for approval by the Secretary. These requirements are linked together as indicated in the subparts which follow. Presentation of the State management program in a similar format is encouraged since it will enable more prompt and systematic review by the Secretary. However, there is no requirement that a State present its management program in the format which corresponds exactly to the listing of categories below. The broad categories are: Land and Water Uses, Subpart B; Authorities and Organization, Subpart C; Coordination, Subpart D; and Miscellaneous, Subpart E. Subpart F, Applications for Administrative Grants, deals with applications for administrative grants upon approval of State coastal zone management programs which will be subject to periodic review by the Secretary in accordance with Section 309 of the Act. In addition to providing criteria against which State coastal zone management programs can be consistently and uniformly judged in the approval process and establishing procedures for the application by States for administrative grants, it is the intent of this part to provide guidance to coastal States in the development of management programs. Therefore, many of the sections dealing with approval requirement in the subparts are followed by a "comment" which refers to a section or sections of the Act and indicates the interpretation placed upon the requirements of the Act or the regulation by the Secretary.

§ 923.2 Definitions.

In addition to the terms defined in the Act and 15 CFR 920.2, the following terms shall have the meanings indicated below:

"Final approval" means, with respect to a coastal zone management program, approval of a program which terminates the eligibility of the State for grants under Section 305 of the Act and makes the State eligible for grants under Section 306 of the Act. In cases where a State has elected to follow the geographical segmentation option pursuant to § 923.43, final approval will apply only to that specific geographical segment. The State will continue to remain eligible for development grants pursuant to Section 305 of the Act for the remainder of the State's coastal zone.

"Preliminary approval" means, with respect to a coastal zone management program, approval of a program which does not terminate the eligibility of the State for further grants under Section 305 of the Act, and which does not make the State eligible for grants under Section 306 of the Act.

"Use of regional benefit" means a land or water use that typically provides benefits to a significant area beyond the boundaries of a single unit of the lowest level of local, general-purpose government.

§ 923.3 Submission of management programs.

(a) Upon completion of the development of its management program, a State shall submit the program to the Secretary for review and final approval in accordance with the provisions of these regulations. A program submitted for final approval must comply with all of the provisions set forth in Subparts A-E of this part, including, in particular, Subpart C, which requires that certain authorities and plans of organization be in effect at the time of the submission.

(b) Optionally, the State may submit for the preliminary approval of the Secretary a program complying with the substantive requirements of this part, but for which the proposed authorities and organization complying with the provisions of Subpart C are not yet legally effective. In reviewing a program submitted for preliminary approval, the Secretary may grant such approval subject to establishment of a legal regime providing the authorities and organization called for in the program. If the State elects this option, it shall continue to be eligible for funding under Section 305 but it shall not yet be eligible for funding under Section 306 of the Act until such time as its program is finally approved. Upon a showing by the State that authorities and organization necessary to implement the program which has received preliminary approval are in effect, final approval shall be granted.

Comment. The purpose of the optional procedure is to provide a State with an opportunity for Secretarial review of its program before State legislation is enacted to put the program into legal effect. Some States may prefer not to utilize the optional procedure, especially those which have legislative authority enabling the coastal zone agency of the State to put the program into effect by administrative action. In any event, the Office of Coastal Zone Management will be available for consultation during all phases of development of the program.

(c) States completing the requirements set forth in Subpart B—Land and Water Uses, and Subpart D—Coordination, will be deemed to have fulfilled the statutory requirements associated with each criteria. If, however, a State chooses to adopt alternative methods and procedures, which are at least as comprehensive as the procedures set forth below, for fulfilling those statutory requirements contained in Subparts B and D, they may do so upon prior written approval of the Secretary. The States are encouraged to consult with the Office of Coastal Zone Management as early as possible.

Comment. The thrust of the Act is to encourage coastal States to exercise their full

authority over the lands and waters in the coastal zone by developing land and water use programs for the zone, including unified policies, criteria, standards, methods and processes for dealing with land and water uses of more than local significance. While the Act mandates a State to meet specific statutory requirements in order for the State to be eligible for administrative grants, it does not require the State to follow specific processes in meeting those requirements. The Secretary will review any State management program that meets the requirements contained in Subparts B and D in addition to the other subparts contained herein.

§ 923.4 Evaluation of management programs—general.

(a) In reviewing management programs submitted by a coastal State pursuant to § 923.3, the Secretary will evaluate not only all of the individual program elements required by the Act and set forth in Subparts B–E of this part, but the objectives and policies of the State program as well to assure that they are consistent with national policies declared in Section 303 of the Act.

(b) Each program submitted for approval shall contain a statement of problems and issues, and objectives and policies. The statements shall address:

(1) Major problems and issues, both within and affecting the State's coastal zone;

(2) Objectives to be attained in interagency and intergovernmental cooperation, coordination and institutional arrangements; and enhancing management capability involving issues and problem identification, conflict resolution, regulation and administrative efficiency at the State and local level;

(3) Objectives of the program in preservation, protection, development, restoration and enhancement of the State's coastal zone;

(4) Policies for the protection and conservation of coastal zone natural systems, cultural, historic and scenic areas, renewable and non-renewable resources, and the preservation, restoration and economic development of selected coastal zone areas.

(c) The Secretary will review the management program for the adequacy of State procedures utilized in its development and will consider the extent to which its various elements have been integrated into a balanced and comprehensive program designed to achieve the above objectives and policies.

Comment. Evaluation of the statutory requirements established in this subpart will concentrate primarily upon the adequacy of State processes in dealing with key coastal problems and issues. It will not, in general, deal with the wisdom of specific land and water use decisions, but rather with a determination that in addressing those problems and issues, the State is aware of the full range of present and potential needs and uses of the coastal zone, and has developed procedures, based upon scientific knowledge, public participation and unified governmental policies, for making reasoned choices and decisions.

Management programs will be evaluated in the light of the Congressional findings and policies as contained in Sections 302 and 303 of the Act. These sections make it clear that Congress, in enacting the legislation, was concerned about the environmental degradation, damage to natural and scenic areas, loss of living marine resources and wildlife, decreasing open space for public use and shoreline erosion being brought about by population growth and economic development. The Act thus has a strong environmental thrust, stressing the "urgent need to protect and to give high priority to natural systems in the coastal zone." A close working relationship between the agency responsible for the coastal zone management program and the agencies responsible for environmental protection is vital in carrying out this legislative intent. States are encouraged by the Act to take into account ecological, cultural, historic and esthetic values as well as the need for economic development in preparing and implementing management programs through which the States, with the participation of all affected interests and levels of government, exercise their full authority over coastal lands and waters.

Further assistance in meeting the intent of the Act may be found in the Congressional Committee Reports associated with the passage of the legislation (Senate Report 92–753 and House Report 92–1049). It is clear from these reports that Congress intended management programs to be comprehensive and that a State must consider all subject areas which are pertinent to the particular circumstances which prevail in the State. A comprehensive program should have considered at least the following representative elements:

(1) Present laws, regulations, and applicable programs for attainment of air and water quality standards, on land and water uses, and on environmental management by all levels of government;

(2) Present ownership patterns of the land and water resources, including administration of publicly owned properties;

(3) Present populations and future trends, including assessments of the impact of population growth on the coastal zone and estuarine environments;

(4) Present uses, known proposals for changes and long-term requirements of the coastal zone;

(5) Energy generation and transmission;

(6) Estuarine habitats of fish, shellfish and wildlife;

(7) Industrial needs;

(8) Housing requirements;

(9) Recreation, including beaches, parks, wildlife preserves, sport fishing, swimming and pleasure boating;

(10) Open space, including educational and natural preserves, scenic beauty, and public access, both visual and physical, to coastlines and coastal estuarine areas;

(11) Mineral resources requirements;

(12) Transportation and navigation needs;

(13) Floods and flood damage prevention, erosion (including the effect of tides and currents upon beaches and other shoreline areas), land stability, climatology and meteorology;

(14) Communication facilities;

(15) Commercial fishing; and

(16) Requirements for protecting water quality and other important natural resources.

The list of considerations is not meant to be exclusive, nor does it mean that each consideration must be given equal weight. State initiative to determine other relevant factors and consider them in the program is essential to the management of the coastal zone as envisioned by Congress.

In assessing programs submitted for approval, the Secretary, in consultation with other concerned Federal agencies, will examine such programs to determine that the full range of public problems and issues affecting the coastal zone have been identified and considered. In this connection, developments outside the coastal zone may often have a significant impact within the coastal zone and create a range of public problems and issues which must be dealt with in the coastal zone management program.

The Secretary encourages the States to develop objectives toward which progress can be measured and will review program submissions in this light. While it is recognized that many essential coastal zone management objectives are not quantifiable (e.g. public aspirations, "quality of life"), others are, and should be set forth in measurable terms where feasible (e.g. shore erosion, beach access, recreational demand, energy facility requirements). Identifying and analyzing problems and issues in measurable terms during the program development phase will facilitate the formulation of measurable objectives as part of the approval submission.

§ 923.5 Environmental impact assessment.

Individual environmental impact statements will be prepared and circulated by NOAA as an integral part of the review and approval process for State coastal zone management programs pursuant to the National Environmental Policy Act (Pub. L. 91–190, 42 USC 4321 et seq) and its implementing regulations. The Administrator of NOAA will circulate an environmental impact statement prepared primarily on the basis of an environmental impact assessment and other relevant data submitted by the individual applicant States.

Subpart B—Land and Water Uses

§ 923.10 General.

(a) This subpart deals with land and water uses in the coastal zone which are subject to the management program.

(b) In order to provide a relatively simple framework upon which discussion of the specific requirements associated with this subpart may proceed, it may be helpful to categorize the various types of land and water uses which the Act envisions.

(1) The statutory definition of the landward portion of the coastal zone states that it "extends inland from the shorelines only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters." Thus, the coastal zone will include those lands and only those lands where any existing, projected or potential use will have a "direct and significant impact on the coastal waters." Any such use will be subject to the terms of the management program, pursuant to Section 305(b)(2).

(2) There may well be uses of certain lands included within the coastal zone which will not have such "direct and significant impact." Such uses may be subject to regulation by local units of government within the framework of the management program.

(3) The Act also requires that management programs contain a method of assuring that "local land and water use regulations within the coastal zone do not unreasonably restrict or exclude land and water uses of regional benefit." This requirement is described more fully in § 923.17.

(c) As part of the State's management program, it must address and exercise authority over the following:

(1) *Land and water uses which have a direct and significant impact upon coastal waters.* These uses are described more fully in § 923.12.

(2) *Areas of particular concern.* Section 305(b)(3) specifies that the management program include an inventory and designation of areas of particular concern within the coastal zone. Section 923.13 deals more thoroughly with this statutory requirement. Such areas must be considered of Statewide concern and must be addressed in the management program.

(3) *Siting of facilities necessary to meet requirements which are other than local in nature.* The management program must take "adequate consideration of the national interest involved in the siting of facilities necessary to meet requirements which are other than local in nature" (Section 306(c)(8)). This requirement is more fully discussed in § 923.15.

§ 923.11 Boundaries of the coastal zone.

(a) *Requirement.* In order to fulfill the requirement contained in Section 305(b)(1), the management program must show evidence that the State has developed and applied a procedure for identifying the boundary of the State's coastal zone meeting the statutory definition of the coastal zone contained in Section 304(a). At a minimum this procedure should result in:

(1) A determination of the inland boundary required to control, through the management program, shorelands the uses of which have direct and significant impacts upon coastal waters,

(2) A determination of the extent of the territorial sea, or where applicable, of State waters in the Great Lakes,

(3) An identification of transitional and intertidal areas, salt marshes, wetlands and beaches,

(4) An identification of all Federally owned lands, or lands which are held in trust by the Federal government, its officers and agents in the coastal zone and over which a State does not exercise any control as to use.

(b) *Comment.* Statutory citation: Section 305(b)(1):

> Such management program shall include * * * an identification of the boundaries of the coastal zone subject to the management programs.

Useful background information concerning this requirement appears in Part 920.11, which is incorporated into this part by reference.

(1) The key to successful completion of this requirement lies in the development and use of a procedure designed to identify the landward extent of the coastal zone. Included in this procedure must be a method for determining those "shorelands, the uses of which have a direct and significant impact upon the coastal waters." These uses shall be considered the same as the "land and water uses" described in § 923.12, reflecting the requirements of Section 305(b)(2) of the Act regardless of whether those uses are found, upon analysis, to be "permissible." The coastal zone must include within it those lands which have any existing, projected or potential uses which have a direct and significant impact upon the coastal waters and over which the terms of the management program will be exercised. In some States, existing regulations controlling shoreland uses apply only in a strip of land of uniform depth (e.g. 250 feet, 1,000 yards, etc.) behind the shoreline. Such a boundary will be acceptable if it approximates a boundary developed according to the procedure outlined above and extends inland sufficiently for the management program to control lands the uses of which have a direct and significant impact upon coastal waters. States may wish, for administrative convenience, to designate political boundaries, cultural features, property lines or existing designated planning and environmental control areas, as boundaries of the coastal zone. While the Secretary will take into account the desirability of identifying a coastal zone which is easily regulated as a whole, the selection of the boundaries of the coastal zone must bear a reasonable relationship to the statutory requirement. Nothing in this part shall preclude a State from exercising the terms of the management program in a landward area more extensive than the coastal zone called for in this part. If such a course is selected, the boundaries of the coastal zone must nevertheless be identified as above and the provisions of the Act will be exercised only in the defined coastal zone. It should be borne in mind that the boundary should include lands and waters which are subject to the management program. This means that the policies, objectives and controls called for in the management program must be capable of being applied consistently within the area. The area must not be so extensive that a fair application of the management program becomes difficult or capricious, nor so limited that lands strongly influenced by coastal waters and over which the management program should reasonably apply, are excluded.

(2) Inasmuch as the seaward boundary of the coastal zone is established in the Act, the States will be required to utilize the statutory boundary, i.e. in the Great Lakes, the international boundary between the United States and Canada, and elsewhere the outer limits of the United States territorial sea. At present, this limit is three nautical miles from the appropriate baselines recognized by international law and defined precisely by the United States. In the event of a statutory change in the boundary of the territorial sea, the question of whether a corresponding change in coastal zone boundaries must be made, or will be made by operation of law, will depend on the specific terms of the statutory change and cannot be resolved in advance. In the waters of Lake Michigan, the boundary shall extend to the recognized boundaries with adjacent States.

(3) A State's coastal zone must include transitional and intertidal areas, salt marshes, wetlands and beaches. Hence the boundary determination procedure must include a method of identifying such coastal features. In no case, however, will a State's landward coastal zone boundary include only such areas in the absence of application of the procedure called for herein or in § 923.43.

(4) Since the coastal zone excludes lands the use of which is by law subject solely to the discretion of, or which is held in trust by the Federal government, its officers and agents, the coastal zone boundary must identify such lands which are excluded from the coastal zone. In order to complete this requirement, the State should indicate those Federally owned lands, or lands held in trust by the Federal government, *and* over which the State does not exercise jurisdiction as to use. In the event that a State fails to identify lands held by an agency of the Federal government as excluded lands, and the agency, after review of the program under Section 307(b), is of the opinion that such lands should be excluded, the disagreement will be subject to the mediation process set forth in said section.

§ 923.12 Permissible land and water uses.

(a) *Requirement.* In order to fulfill the requirements contained in Section 305(b)(2), the management must show evidence that the State has developed and applied a procedure for defining "permissible land and water uses within the coastal zone which have a direct and significant impact upon the coastal waters," which includes, at a minimum:

(1) a method for relating various specific land and water uses to impact upon coastal waters, including utilization of an operational definition of "direct and significant impact,"

(2) an inventory of natural and man-made coastal resources,

(3) an analysis or establishment of a method for analysis of the capability and suitability for each type of resource and application to existing, projected or potential uses.

(4) an analysis or establishment of a method for analysis of the environmental impact of reasonable resource utilizations.

(b) *Comment.* Statutory citation: Section 305(b)(2):

> Such management program shall include * * * a definition of what shall constitute permissible land and water uses within the coastal zone which have a direct and significant impact upon the coastal waters.

Useful background information concerning this requirement appears in 15 CFR 920.12, which is incorporated into this part by reference. Completion of this requirement should be divided into two distinct elements: a determination of those land and water uses having a direct and significant impact upon coastal waters, and an identification of such uses which the State deems permissible.

(1) *Section 305(b)(4).* In identifying those uses which have a "direct and sig-

nificant impact," the State should define that phrase in operational terms that can be applied uniformly and consistently, and should develop a method for relating various uses to impacts upon coastal waters. Existing, projected and potential uses should be analyzed as to the level and extent of their impact, be it adverse, benign or beneficial, intrastate or interstate. These impacts should then be assessed to determine whether they meet the definition of "direct and significant impact upon coastal waters." (These are the ones by which the boundaries of the coastal zone are defined.) Those uses meeting that definition are automatically subject to control by the management program.

(2) In determining which land and water uses may be deemed permissible, a State should develop a method for assuring that such decisions are made in an objective manner, based upon evaluation of the best available information concerning land and water capability and suitability. This method should include at a minimum:

(i) An inventory of significant natural and man-made coastal resources, including but not limited to, shorelands, beaches, dunes, wetlands, uplands, barrier islands, waters, bays, estuaries, harbors and their associated facilities. This should not be construed as requiring long-term, continuing research and baseline studies, but rather as providing the basic information and data critical to successful completion of a number of required management program elements. States are encouraged, however, to continue research and studies as necessary to detect early warnings of changes to coastal zone resources. It is recognized that in some States a complete and detailed inventory of such resources may be expensive and time consuming in relation to the value of information gathered in the development of the management program. Much information, of course, already exists and should be integrated into the inventory. The Secretary, in reviewing this particular requirement, will take into account the nature and extent of the State's coastline, the funding available and existing data sources.

(ii) An analysis or establishment of a method for analysis of the capabilities of each resource for supporting various types of uses (including the capability for sustained and undiminished yield of renewable resources), as well as of the suitability for such resource utilization when evaluated in conjunction with other local, regional and State resources and uses. Resource capability analysis should include physical, biological and chemical parameters as necessary.

(iii) An analysis or establishment of a method for analysis of the impact of various resource uses upon the natural environment (air, land and water). Based upon these analyses and applicable Federal, State and local policies and standards, the State should define permissible uses as those which can be reasonably and safely supported by the resource, which are compatible with surrounding resource utilization and which will have a tolerable impact upon the environment. These analyses, in part, will be provided through existing information on environmental protection programs, and should be supplemented to the extent necessary for determining the relationship between land uses and environmental quality. Where a State prohibits a use within the coastal zone, or a portion thereof, it should identify the reasons for the prohibition, citing evidence developed in the above analyses. It should be pointed out that uses which may have a direct and significant impact on coastal waters when conducted close to the shoreline may not have a direct and significant impact when conducted further inland. Similarly, uses which may be permissible in a highly industrialized area may not be permissible in a pristine marshland. Accordingly, the definition may also be correlated with the nature (including current uses) and location of the land on which the use is to take place. The analyses which the State will undertake pursuant to this section should also be useful in satisfying the requirements of § 923.13 through § 923.17.

§ 923.13 Areas of particular concern.

(a) *Requirement.* In order to fulfill the requirements contained in Section 305 (b)(3), the management program must show evidence that the State has made an inventory and designation of areas of particular concern within the coastal zone. Such designations shall be based upon a review of natural and man-made coastal zone resources and uses, and upon consideration of State-established criteria which include, at a minimum, those factors contained in 15 CFR 920.13, namely:

(1) Areas of unique, scarce, fragile or vulnerable natural habitat, physical feature, historical significance, cultural value and scenic importance;

(2) Areas of high natural productivity or essential habitat for living resources, including fish, wildlife and the various trophic levels in the food web critical to their well-being;

(3) Areas of substantial recreational value and/or opportunity;

(4) Areas where developments and facilities are dependent upon the utilization of, or access to, coastal waters;

(5) Areas of unique geologic or topographic significance to industrial or commercial development;

(6) Areas of urban concentration where shoreline utilization and water uses are highly competitive;

(7) Areas of significant hazard if developed, due to storms, slides, floods, erosion, settlement, etc.; and

(8) Areas needed to protect, maintain or replenish coastal lands or resources, including coastal flood plains, aquifer recharge areas, sand dunes, coral and other reefs, beaches, offshore sand deposits and mangrove stands.

(b) *Comment.* Statutory citation: Section 305(b)(3).

Such management program shall include * * * an inventory and designation of areas of particular concern within the coastal zone.

Useful background information concerning the requirement appears in 15 CFR 920.13, which is incorporated here by reference. It should be emphasized that the basic purpose of inventorying and designating areas of particular concern within the coastal zone is to express some measure of Statewide concern about them and to include them within the purview of the management program. Therefore, particular attention in reviewing the management program will be directed toward development by the State of implementing policies or actions to manage the designated areas of particular concern.

§ 923.14 Guidelines on priority of uses.

(a) *Requirement.* The management program shall include broad policies or guidelines governing the relative priorities which will be accorded in particular areas to at least those permissible land and water uses identified pursuant to § 923.12. The priorities will be based upon an analysis of State and local needs as well as the effect of the uses on the area. Uses of lowest priority will be specifically stated for each type of area.

(b) *Comment.* Statutory citation: Section 305(b)(5)

Such management program shall include * * * broad guidelines on priority of uses in particular areas, including specifically those uses of lowest priority.

As pointed out in 15 CFR 920.15, the priority guidelines will set forth the degree of State interest in the preservation, conservation and orderly development of specific areas including at least those areas of particular concern identified in § 923.13 within the coastal zone, and thus provide the basis for regulating land and water uses in the coastal zone, as well as a common reference point for resolving conflicts. Such priority guidelines will be the core of a successful management program since they will provide a framework within which the State, its agencies, local governments and regional bodies can deal with specific proposals for development activities in various areas of the coastal zone. In order to develop such broad guidelines, the management program shall indicate that a method has been developed and applied for (1) analyzing State needs which can be met most effectively and efficiently through land and water uses in the coastal zone, and (2) determining the capability and suitability of meeting these needs in specific locations in the coastal zone. In analyzing the States' needs, there should be a determination made of those requirements and uses which have Statewide, as opposed to local, significance. Section 302(h) of the Act states in part that land and water use programs for the coastal zone should include "unified policies, criteria, standards, methods and processes for dealing with land and water use decisions of more than local significance." The inventory and analyses of coastal resources and uses called for in § 923.12 will provide the State with most of the basic data needed to determine the specific locations where coastal resources are capable and suitable for meeting State-

wide needs. In addition, these analyses should permit the State to determine possible constraints on development which may be applied by particular uses. The program should establish special procedures for evaluating land use decisions, such as the siting of regional energy facilities, which may have a substantial impact on the environment. In such cases, the program should make provision for the consideration of available alternative sites which will serve the need with a minimum adverse impact. The identifying and ordering of use priorities in specific coastal areas should lead to the development and adoption of State policies or guidelines on land and water use in the coastal zone. Such policies or guidelines should be part of the management program as submitted by the State and should be consistent with the State's specified management program objectives. Particular attention should be given by the State to applying these guidelines on use priorities within those "areas of particular concern" designated pursuant to § 923.13. In addition, States shall indicate within the management program uses of lowest priority in particular areas, including guidelines associated with such uses.

§ 923.15 National interest in the siting of facilities.

(a) *Requirement.* A management program which integrates (through development of a body of information relating to the national interest involved in such siting through consultation with cognizant Federal and regional bodies, as well as adjacent and nearby States) the siting of facilities meeting requirements which are of greater than local concern into the determination of uses and areas of Statewide concern, will meet the requirements of Section 306(c)(8).

(b) *Comment.* Statutory citation: Section 306(c)(8):

> Prior to granting approval of a management program submitted by a coastal State, the Secretary shall find that * * * the management program provides for adequate consideration of the national interest involved in the siting of facilities necessary to meet requirements which are other than local in nature.

This policy requirement is intended to assure that national concerns over facility siting are expressed and dealt with in the development and implementation of State coastal zone management programs. The requirement should not be construed as compelling the States to propose a program which accommodates certain types of facilities, but to assure that such national concerns are included at an early stage in the State's planning activities and that such facilities not be arbitrarily excluded or unreasonably restricted in the management program without good and sufficient reasons. It is recognized that there may or may not be a national interest associated with the siting of facilities necessary to meet requirements which are other than local in nature. Requirements which are other than local in nature shall be considered those requirements which, when fulfilled, result in the establishment of facilities designed clearly to serve more than one locality (generally, the lowest unit of local, general-purpose government, excluding situations such as with cities and counties which exercise concurrent jurisdiction for the same geographic areas). In order to provide assistance to the States in completing this requirement, a listing is presented below which identifies those requirements which are both (1) other than local in nature, and (2) possess siting characteristics in which, in the opinion of the Secretary, there may be a clear national interest. For each such need, there is a listing of associated facilities. In addition, the principal cognizant Federal agencies concerned with these facilities are also listed. This list must not be considered inclusive, but the State should consider each requirement and facility type in the development of its management program. Consideration of these requirements and facilities need not be seen as a separate and distinct element of the management program, and the listing is provided to assure that the siting of such facilities is not overlooked or ignored. As part of its determination of permissible uses in the coastal zone (§ 923.12), as well as of priority of uses (§ 923.14), the State will have developed a procedure for inventorying coastal resources and identifying their existing or potential utilization for various purposes based upon capability, suitability and impact analyses. The process for responding to the requirements of Section 306(c)(8) should be identical to, and part of, the same procedure. No separate national interest "test" need be applied and submitted other than evidence that the listed national interest facilities have been considered in a manner similar to all other uses, and that appropriate consultation with the Federal agencies listed has been conducted. As a preliminary to adequate consideration of the national interest, the State must determine the needs for such facilities. Management programs must recognize the need of local as well as regional and national populations for goods and services which can be supplied only through the use of facilities in the coastal zone in order to make reasonable provision for such facilities in light of the size and population of the State, the length and characteristics of its coast and the contribution such State is already making to regional and national needs. This will require the State to enter into discussions with appropriate Federal agencies and agencies of other States in the region, a process which should begin early in the development of the management program so that the full dimensions of the national interest may be considered as the State develops its program (§ 923.31 and §923.32). The management program should make reference to the views of cognizant Federal agencies as to how these national needs may be met in the coastal zone of that particular State. States should actively seek such guidance from these Federal agencies, particularly in view of the fact that all management programs will be reviewed with the opportunity for full comment by all affected Federal agencies prior to approval. It is recognized that Federal agencies will differ markedly in their abilities to articulate policies regarding utilization of individual State's coastal zones. NOAA's Office of Coastal Zone Management will encourage Federal agencies to develop policy statements regarding their perception of the national interest in the coastal zone and make these available to the States. The States should also consult with adjacent and nearby States which share similar or common coastal resources or with regional interstate bodies to determine how regional needs may be met in siting facilities. Specific arrangements of "trade-offs" of coastal resource utilization should be documented with appropriate supporting evidence. The importance of this type of interstate consultation and cooperation in planning cannot be overemphasized for it offers the States the opportunity of resolving significant national problems on a regional scale without Federal intervention.

Requirements which are other than local in nature and in the siting of which there may be a clear national interest (with associated facilities and cognizant Federal agencies)

Requirements	Associated facilities	Cognizant Federal Agencies
1. Energy production and transmission.	Oil and gas wells; storage and distribution facilities; refineries; nuclear, conventional, and hydroelectric powerplants; deepwater ports.	Federal Energy Administration, Federal Power Commission, Bureau of Land Management, Atomic Energy Commission, Maritime Administration, Geological Survey, Department of Transportation, Corps of Engineers.
2. Recreation (of an interstate nature)	National seashores, parks, forests; large and outstanding beaches and recreational waterfronts; wildlife reserves.	National Park Service, Forest Service, Bureau of Outdoor Recreation.
3. Interstate transportation	Interstate highways, airports, aids to navigation; ports and harbors, railroads.	Federal Highway Administration, Federal Aviation Administration, Coast Guard, Corps of Engineers, Maritime Administration, Interstate Commerce Commission.
4. Production of food and fiber	Prime agricultural land and facilities; forests; mariculture facilities; fisheries.	Soil Conservation Service, Forest Service, Fish and Wildlife Service, National Marine Fisheries Service.
5. Preservation of life and property	Flood and storm protection facilities; disaster warning facilities.	Corps of Engineers, Federal Insurance Administration, NOAA, Soil Conservation Service.
6. National defense and aerospace	Military installations; defense manufacturing facilities; aerospace launching and tracking facilities.	Department of Defense, NASA.
7. Historic, cultural, esthetic and conservation values.	Historic sites; natural areas; areas of unique cultural significance; wildlife refuges; areas of species and habitat preservation.	National Register of Historic Places, National Park Service, Fish and Wildlife Service, National Marine Fisheries Service.
8. Mineral resources	Mineral extraction facilities needed to directly support activity.	Bureau of Mines, Geological Survey.

§ 923.16 Area designation for preservation and restoration.

(a) *Requirement.* In order to fulfill the requirement contained in Section 306(c)(9), the management program must show evidence that the State has developed and applied standards and criteria for the designation of areas of conservation, recreational, ecological or esthetic values for the purpose of preserving and restoring them.

(b) *Comment.* Statutory citation: Section 306(c)(9):

> Prior to granting approval of a management program submitted by a coastal State, the Secretary shall find that * * * the management program makes provision for procedures whereby specific areas may be designated for the purpose of preserving or restoring them for their conservation, recreation, ecological or esthetic values.

(1) This requirement is closely linked to that contained in § 923.13, dealing with designation of areas of particular concern. Unless the State can make a compelling case to the contrary, all areas designated according to the methods called for in this part shall also be considered as areas of particular concern.

(2) This requirement is reasonably self-explanatory. The State must develop procedures for the designation of areas with certain characteristics. The State, in doing so, must:

(i) Establish standards and criteria for the possible designation of coastal areas intended for preservation or restoration because of their conservation, recreational, ecological or esthetic values, and

(ii) Apply those standards and criteria to the State's coastal resources. (In this, the inventory associated with the requirement of § 923.13 will be most helpful.)

(3) The requirement of the statute goes to the procedures rather than substance; the fact that a State may be unable to move rapidly ahead with a program of preservation or restoration will not prevent the program from being approved. The State should also rank in order of relative priority areas of its coastal zone which have been designated for the purposes set forth in this section. As funds become available, such a ranking will provide a set of priorities for selecting areas to be preserved or restored.

§ 923.17 Local regulations and uses of regional benefit.

(a) *Requirement.* In order to fulfill the requirement contained in Section 306(e)(2), the management program must show evidence that the State has developed and applied a method for determining uses of regional benefit, and that it has established a method for assuring that local land and water use controls in the coastal zone do not unreasonably or arbitrarily restrict or exclude those uses of regional benefit.

(b) *Comment.* Statutory citation: Section 306(e)(2):

> Prior to granting approval, the Secretary shall also find that the program provides * * * for a method of assuring that local land and water use regulations within the coastal zone do not unreasonably restrict or exclude land and water uses of regional benefit.

This requirement is intended to prevent local land and water use decisions from arbitrarily excluding certain land and water uses which are deemed of importance to more than a single unit of local government. For the purposes of this requirement, a use of regional benefit will be one which provides services or other benefits to citizens of more than one unit of local, general-purpose government (excluding situations such as in cities and counties which exercise jurisdiction over the same geographic areas). In order to assure that arbitrary exclusion does not occur, the State must first identify those uses which it perceives will affect or produce some regional benefit. This designation would normally be derived from the inventory and analysis of the uses contained in § 923.12. In any event, however, these uses should include those contained in the table of § 923.15. In addition, the State may determine that certain land and water uses may be of regional benefit under certain sets of circumstances; the State should then establish standards and criteria for determining when such conditions exist. There should be no blanket exclusion or restrictions of these uses in areas of the coastal zone by local regulation unless it can be shown that the exclusion or restriction is based upon reasonable considerations of the suitability of, the area for the uses or the carrying capacity of the area. The requirement of this section does not exclude the possibility that in specific areas certain uses of regional benefit may be prohibited. However, such exclusions may not be capricious. The method by which the management program will assure that such unreasonable restrictions or exclusion not occur in local land and water use decisions will, of course, be up to the State, but it should include the preparation of standards and criteria relating to State interpretation of "unreasonable restriction or exclusion", as well as the establishment of a continuing mechanisms for such determination.

Subpart C—Authorities and Organization

§ 923.20 General.

This subpart deals with requirements that the State possess necessary authorities to control land and water uses and that it be organized to implement the management. It should be emphasized that before final approval of a coastal zone management program can be given by the Secretary of Commerce, the authorities and organizational structure called for in the management program must be in place. Preliminary approval, however, can be given to a proposal which will require subsequent legislative or executive action for implementation and eligibility for administrative grants under Section 306.

§ 923.21 Means of exerting State control over land and water uses.

(a) *Requirement.* In order to fulfill the requirements contained in Sections 305(b)(4) and 306(c)(7), the management program must show evidence that the State has identified a means for controlling each permissible land and water use specified in § 923.12, and for precluding land and water uses in the coastal zone which are not permissible. The management program should contain a list of relevant constitutional provisions, legislative enactments, regulations, judicial decisions and other appropriate official documents or actions which establish the legal basis for such controls, as well as documentation by the Governor or his designated legal officer that the State actually has and is prepared to implement the authorities, including those contained in Section 306(d), required to implement the objectives, policies and individual components of the program.

(b) *Comment.* Statutory citation: Section 305(b)(4):

> Such management program shall include * * * an identification of the means by which the State proposes to exert control over the land and water uses referred to in paragraph (2) of this subsection, including a listing of relevant constitutional provisions, legislative enactments, regulations and judicial decisions;

Statutory citation: Section 306(c)(7):

> Prior to granting approval of a management program submitted by a coastal State, the Secretary shall find that * * * the State has the authorities necessary to implement the program, including the authority required under subsection (d) of this section.

Useful information concerning this requirement appears in 15 CFR 920.14, which is incorporated into this part by reference. The key words in this requirement are, "to exert control over the land and water uses." This reflects the Congressional finding that the "key to more effective protection and use of the land and water resources of the coastal zone is to encourage the States to exercise their full authority over the lands and waters in the coastal zone * * *." It is not the intent of this part to specify for the States the "means" of control; this is a State responsibility. The State must, however, describe in the management program its rationale for developing and deciding upon such "means." The "means" must be capable of actually implementing the objectives, policies and individual components of the management program. As such, requirements shall be reviewed in close conjunction with § 923.24, 923.25 and § 923.26, relating to actual authorities which the State must possess. The management program should also indicate those specific land and water uses over which authority, jurisdiction or control will be exercised concurrently by both State and Federal agencies, particularly those uses affecting water resources, submerged lands and navigable waters. The management program must provide for control of land and water uses in the coastal zone, although the exercise of control may be vested in, or delegated to, various agencies or local government. As part of the approval of a management program, the Secretary must find that the means for controlling land and water uses identified in § 923.21 are established and in place, and that the means include the

authorities contained in § 923.24 and § 923.25. This finding will be based upon documentation by the Governor of the coastal State or his designated legal officer that the State possesses and is prepared to implement the requisite authorities.

§ 923.22 Organizational structure to implement the management program.

(a) *Requirement.* In order to fulfill the requirement contained in Section 305(b)(6), the management program must contain a description of how the State is organized to implement the authorities identified in § 923.21. In addition, the management program must contain a certification by the Governor of the State or his designated legal officer that the State has established its organizational structure to implement the management program.

(b) *Comment.* Statutory citation: Section 305(b)(6):

Such management program shall include * * * a description of the organizational structure proposed to implement the management program, including the responsibilities and interrelationships of local, areawide, State, regional and interstate agencies in the management process.

Statutory citation: Section 306(c)(6):

Prior to granting approval of a management program submitted by a coastal State, the Secretary shall find that * * * the State is organized to implement the management program required under paragraph (1) of this subsection.

Useful background information and guidance concerning this requirement appears in 15 CFR 920.16, which is incorporated into this part by reference. The legislative history of the Act makes it clear that the States should be accorded maximum flexibility in organizing for implementation of their coastal zone management programs. Thus, neither the Act nor this part provide an organizational model which must be followed. While individual State programs may have a wide range of interstate, State, local or areawide agency roles to play, the program will be reviewed closely for assurance that it constitutes an organized and unified program. Consistent with this principle, there must be a clear point of responsibility for the program, although program implementation may be undertaken by several State entities. In those cases, where a complex interagency and intergovernmental process is established, the State must submit a description of roles and responsibilities of each of the participants and how such roles and responsibilities contribute to a unified coastal zone management program. This description should be sufficiently detailed to demonstrate that a coherent program structure has been proposed by the State and the State is prepared to act in accordance with the objectives of the management program. Although the Act does not prescribe the creation of a central management agency at the State level, it envisions the creation of a coastal zone management entity that has adequate legislative and/or executive authority to implement the policies and requirements mandated in the Act. Review of the management program for compliance with this requirement will be undertaken as a single review with review of the requirements contained in § 923.31, full participation by interested bodies in adoption of management programs, and § 923.23, designation of a single State agency.

§ 923.23 Designation of a single agency.

(a) *Requirement.* In order to fulfill the requirement of Section 306(c)(5), the management program must contain appropriate documentation that the Governor of the coastal State has designated a single agency to be responsible for receiving and administering grants under Section 306 for implementing an approved management program.

(b) *Comment.* Statutory citation: Section 306(c)(5):

Prior to granting approval of a management program submitted by a coastal State, the Secretary shall find that * * * the Governor of the State has designated a single agency to receive and administer the grants for implementing the management program required under paragraph (1) of this subsection.

This requirement is closely related to that contained in § 923.22, relating to a description of the organizational structure which will implement the management program. While this requirement is self-explanatory, it should be pointed out that States will undoubtedly come forward with a wide variety of organizational structures to implement approved management programs. Some will probably be quite complex, utilizing a variety of control techniques at a number of governmental levels. Nothing in this part should be construed as limiting the options available to a State for implementing its program. The purpose of the requirement is simply to identify a single agency which will be fiscally and programmatically responsible for receiving and administering the grants under Section 306 to implement the approved management program.

§ 923.24 Authorities to administer land and water uses, control development and resolve conflicts.

(a) *Requirement.* (1) The management program must contain documentation by the Governor or his designated legal officer that the agencies and governments chosen by the State to administer the management program have the authority to administer land and water regulations, control development in accordance with the management program and to resolve use conflicts.

(b) *Comment.* Statutory citation: Section 306(d)(1):

Prior to granting approval of the management program, the Secretary shall find that the State, acting through its chosen agency or agencies, including local governments, areawide agencies designated under Section 204 of the Demonstration Cities and Metropolitan Development Act of 1966, regional agencies, or interstate agencies, has authority for the management of the coastal zone in accordance with the management program. Such authority shall include power * * * to administer land and water use regulations, control development in order to ensure compliance with the management program and to resolve conflicts among competing uses * * *.

This requirement shall be reviewed in close conjunction with that of §§ 923.21, 923.25 and § 923.26, dealing with authorities which the State's organizational structure must possess in order to ensure implementation of the management program. The language of this requirement makes it clear that the State may choose to administer its program using a variety of levels of governments and agencies, but that if it does, the State must have available to it the authorities specified.

§ 932.25 Authorities for property acquisition.

(a) *Requirement.* The management program shall contain documentation by the Governor or his designated legal officer that the agency or agencies, including local governments, areawide agencies, regional or interstate agencies, responsible for implementation of the management program have available the power to acquire fee simple and less than fee simple interests in lands, waters and other property through condemnation or other means where necessary to achieve conformance with the management program. Where the power includes condemnation, the State shall so indicate. Where the power includes other means, the State shall specifically identify such means.

(b) *Comment.* Statutory citation: Section 306(d)(2):

Prior to granting approval of the management program, the Secretary shall find that the State, acting through its chosen agency or agencies, including local governments, areawide agencies designated under Section 204 of the Demonstration Cities and Metropolitan Development Act of 1966, regional agencies or interstate agencies, has authority for the management of the coastal zone in accordance with the management program. Such authority shall include power * * * to acquire fee simple and less than fee simple interests in lands, waters and other property through condemnation or other means when necessary to achieve conformance with the management program * * *.

In most cases, it will not be necessary to acquire fee simple ownership. Normally, appropriate use restrictions will be adequate to achieve conformance with the program. In other cases, an easement may be necessary to achieve conformance with the management program. Where acquisition is necessary, this section contemplates acquisition by condemnation or through other means. However, the mere authority to acquire an interest in lands or waters by purchase from a willing vendor will not be sufficient in cases where the acquisition of interests in real property is a necessary and integral part of the program. In such cases, the power of condemnation need be no broader than necessary to achieve conformance with the program. For example, if a State's program includes provisions expressly requiring that power transmission lines and pipelines be located in specified energy and transportation corridors to minimize environmental impact, and for State ac-

quisition of such transportation corridors, then the State should have the power to acquire corridors for such purposes through condemnation. It is not necessary that the power to acquire real property be held by any one particular agency involved in implementing the management program. The authority must, however, be held by one or more agencies or local governments with a statutory responsibility to exercise the authority without undue delay when necessary to achieve conformance with the management program.

§ 923.26 Techniques for control of land and water uses.

(a) *Requirement.* The management program must contain documentation by the Governor or his designated legal officer that all existing, projected and potential land and water uses within the coastal zone may be controlled by any one or a combination of the techniques specified in Section 306(e)(1).

(b) *Comment.* Statutory citation: Section 306(e)(1):

Prior to granting approval, the Secretary shall also find that the program provides * * * for any one or a combination of the following general techniques for control of land and water uses within the coastal zone:

(1) Section 306(e)(1)(A) "State establishment of criteria and standards for local implementation, subject to administrative review and enforcement of compliance." This option requires the State to establish general criteria and standards within the framework of the coastal zone program for implementation by local government. Such criteria and standards would provide for application of criteria and standards to specific local conditions. Implementation by a local unit of government would consist of adoption of a suitable local zoning ordinance or regulation, and enforcement on a continuing basis. Administrative review at the State level requires provision for review of local ordinances and regulations and local enforcement activity for consistency with the criteria and standards as well as programs, not review of specific cases on the merits. In the event of deficiencies either in regulation or local enforcement, State enforcement of compliance would require either appropriate changes in local regulation or enforcement or direct State intervention.

(2) Section 306(e)(1)(B) "Direct State land and water use planning and regulation." Under this option the State would become directly involved in the establishment of detailed land and water use regulations and would apply these regulations to individual cases. Initial determinations regarding land and water use in the coastal zone would be made at the State level. This option preempts the traditional role of local government in the zoning process involving lands or waters within the coastal zone.

(3) Section 306(e)(1)(C) "State administrative review for consistency with the management program of all development plans, projects, or land and water regulations, including exceptions and variances thereto proposed by any State or local authority or private developer, with power to approve or disapprove after public notice and an opportunity for hearings." This option leaves the local unit of government free to adopt zoning ordinances or regulations without State criteria and standards other than the program itself, but subjects certain actions by the local unit of government to automatic State review, including public notice and a hearing when requested by a party. Such actions include:

(i) Adoption of land and water use regulations, ordinarily in the form of a zoning ordinance or regulation.

(ii) Granting of an exception or variance to a zoning ordinance or regulation.

(iii) Approval of a development plan or project proposed by a private developer. This may be defined to exclude approval of minor projects, such as small residences or commercial establishments, or those which do not have a significant impact.

(4) It should be noted that State review is for consistency with the management program, not of the merits or of the facts on which the local decision is based.

(5) The State may choose to utilize only one of the specified techniques, or more than one, or a combination of them in different locations or at different times. Within the parameters set forth in the requirement, there is a large variety of tools which the management program could adopt for controlling land and water uses. The program should identify the techniques for control of land and water uses which it intends to use for existing, projected and potential uses within the coastal zone. This requirement will be reviewed in close conjunction with those contained in §§ 923.21, 923.24 and 923.25, dealing with State authorities to implement the management program.

Subpart D—Coordination

§ 923.30 General.

One of the most critical aspects of the development of State coastal zone management programs will be the ability of the States to deal fully with the network of public, quasi-public and private bodies which can assist in the development process and which may be significantly impacted by the implementation of the program. Each State will have to develop its own methods for accommodating, as appropriate, the varying, often conflicting interests of local governments, water and air pollution control agencies, regional agencies, other State agencies and bodies, interstate organizations, commissions and compacts, the Federal government and interested private bodies. It is the intent of these requirements for coordination with governmental and private bodies to assure that the State, in developing its management program, is aware of the full array of interests represented by such organizations, that opportunity for participation was provided, and that adequate consultation and cooperation with such bodies has taken place and will continue in the future.

§ 923.31 Full participation by relevant bodies in the adoption of management programs.

(a) *Requirement.* In order to fulfill the requirement contained in section 306(c)(1), the management program must show evidence that:

(1) The management program has been formally adopted in accordance with State law or, in its absence, administrative regulations;

(2) The State has notified and provided an opportunity for full participation in the development of its management program to all public and private agencies and organizations which are liable to be affected by, or may have a direct interest in, the management program. The submission of the management program shall be accompanied by a list identifying the agencies and organizations referred to in paragraph (a)(2) of this section, the nature of their interest, and the opportunities afforded such agencies and organizations to participate in the development of the management program. These organizations should include those identified pursuant to § 923.32, which have developed local, areawide or interstate plans applicable to an area within the coastal zone of the State as of January 1 of the year in which the management program is submitted for approval; and

(3) The management program will carry out the policies enumerated in section 303 of the Act.

(b) *Comment.* Statutory citation: Section 306(c)(1):

Prior to granting approval of a management program submitted by a coastal State, the Secretary shall find that * * * (t)he State has developed and adopted a management program for its coastal zone in accordance with rules and regulations promulgated by the Secretary, after notice, and with the opportunity of full participation by relevant Federal agencies, State agencies, local governments, regional organizations, port authorities, and other interested parties, public and private, which is adequate to carry out the purposes of this title and is consistent with the policy declared in section 303 of this title.

This requirement embodies the actual approval by the Secretary of Commerce of a State's coastal zone management program pursuant to all of the terms of the Act, plus associated administrative rules and regulations. As the operative section, it subsumes all of the requirements included in this part, which shall be considered the "rules and regulations promulgated by the Secretary" mentioned in section 306(c)(1). The citation, however, also includes some specific additional requirements, for which guidance and performance criteria are necessary. These additional requirements include:

(1) Adoption of the management program by the State. The management program must demonstrate that it represents the official policy and objectives of the State. In general, this will require

documentation in the management program that the State management entity has formally adopted the management program in accordance with either the rules and procedures established by statute, or in the absence of such law, administrative regulations.

(2) Opportunity for full participation by relevant Federal agencies, State agencies, local governments, regional organizations, port authorities, and other interested parties, public and private. A major thrust of the Act is its concern for full participation and cooperation in the development and implementation of management programs by all inferested and affected agencies, organizations and individuals. This is specifically included in the statement of national policy in section 303(c). The State must provide evidence that the listed agencies and parties were, in fact, provided with an opportunity for full participation. It will be left to the States to determine the method and form of such evidence, but it should contain at a minimum:

(i) A listing, as comprehensive as possible, of all Federal and State agencies, local governments, regional organizations, port authorities and public and private organizations which are likely to be affected by, or have a direct interest in, the development and implementation of a management program (including those identified in § 923.32), and

(ii) A listing of the specific interests of such organizations in the development of the management program, as well as an identification of the efforts made to involve such bodies in the development process.

(a) "Opportunity for full participation" is interpreted as requiring participation at all appropriate stages of management program development. The assistance which can be provided by these public and private organizations can often be significant, and therefore contact with them should be viewed not only as a requirement for approval, but as an opportunity for tapping available sources of information for program development. Early and continuing contact with these agencies and organizations is both desirable and necessary. In many cases it may be difficult or impossible to identify all interested parties early in the development of the State's program. However, the public hearing requirement of § 923.41 should afford an opportunity to participate to interested persons and organizations whose interest was not initially noted.

(3) Consistency with the policy declared in section 303 of the Act. In order to facilitate this review, the State's management program must indicate specifically how the program will carry out the policies enumerated in section 303.

§ 923.32 Consultation and coordination with other planning.

(a) *Requirement.* In order to fulfill the requirements contained in section 306(c)(2), the management program must include:

(1) An identification of those entities mentioned which have plans in effect on January 1 of the year submitted,

(2) A listing of the specific contacts made with all such entities in order to coordinate the management program with their plans,

(3) An identification of the conflicts with those plans which have not been resolved through coordination, and continuing actions contemplated to attempt to resolve them, and

(4) Indication that a regular consultive mechanism has been established and is active, to undertake coordination between the single State agency designated pursuant to § 923.23, and the entities in paragraph (B) of Section 306(c)(2).

(b) *Comment.* Statutory citation: Section 306(c)(2):

"Prior to granting approval of a management program submitted by a coastal State, the Secretary shall find * * * that the State has:

(A) Coordinated its program with local, areawide and interstate plans applicable to areas within the coastal zone existing on January 1 of the year in which the State's management program is submitted to the Secretary, which plans have been developed by a local government, an areawide agency designated pursuant to regulations established under section 204 of the Demonstration Cities and Metropolitan Development Act of 1966, a regional agency, or an interstate agency; and

(B) Established an effective mechanism for continuing consultation and coordination between the management agency designated pursuant to paragraph (5) of this subsection and with local governments, interstate agencies, regional agencies and areawide agencies within the coastal zone to assure the full participation of such local governments and agencies in carrying out the purposes of this title."

Relevant background information on this requirement appears in 15 CFR 920.45(f), and is incorporated by reference herein. While the State will exercise its authority over land and water uses of Statewide significance in the coastal zone by one or more of the techniques set forth in § 923.28, the State management program must be coordinated with existing plans applicable to portions of the coastal zone. It should be noted that this section does not demand compliance of the State program with local plans, but the process envisioned should enable a State not only to avoid conflicts and ambiguities among plans and proposals, but to draw upon the planning capabilities of a wide variety of governments and agencies. Coordination implies a high degree of cooperation and consultation among agencies, as well as a mutual willingness on the part of the participants to accommodate their activities to the needs of the others in order to carry out the public interest. Perceptions of the public good will differ and it is recognized that not all real or potential conflicts can be resolved by this process. Nevertheless, it is a necessary step. Effective cooperation and consultation must continue as the management program is put into operation so that local governments, interstate, regional and areawide agencies can continue to participate in the carrying out of the management program. The "plans" referred to in (A) shall be considered those which have been officially adopted by the entity which developed them, or which are commonly recognized by the entity as a guide for action. The list of relevant agencies required under § 923.31 will be of use in meeting this requirement. It will enable the State to identify those entities mentioned in (A) which have such plans and to provide evidence that coordination with them has taken place. The process envisioned should not only enable a State to avoid conflicts between its program and other plans applying within its coastal zone, but to draw upon the planning capabilities of a wide variety of local governments and other agencies. In developing and implementing those portions of the program dealing with power transmission lines, pipelines, interstate transportation facilities and other facilities which will significantly impact on neighboring States of a region, particular attention should be paid to the requirements of this section.

Subpart E—Miscellaneous

§ 923.40 General.

The requirements in this subpart do not fall readily into any of the above categories but deal with several important elements of an approvable management program. They deal with public hearings in development of the management program, gubernatorial review and approval, segmentation of State programs and applicability of water and air pollution control requirements.

§ 923.41 Public hearings.

(a) *Requirements.* In order to fulfill the requirement contained in section 306(c)(3), the management program must show evidence that the State has held public hearings during the development of the management program following not less than 30 days notification, that all documents associated with the hearings are conveniently available to the public for review and study at least 30 days prior to the hearing, that the hearings are held in places and at times convenient to affected populations, that all citizens of the State have an opportunity to comment on the total management program and that a report on each hearing be prepared and made available to the public within 45 days.

(b) *Comment.* Statutory citation: Section 306(c)(3):

Prior to granting approval of a management program submitted by a coastal State, the Secretary shall find that * * * (t)he State has held public hearings on the development of the management program.

Extensive discussion and statements of policy regarding this requirement appears in §§ 920.30, 920.31 and 920.32, which is incorporated herein by reference.

§ 923.42 Gubernatorial review and approval.

(a) *Requirement.* In order to fulfill the requirement contained in section 306(c)(4), the management program must contain a certification signed by the Governor of the coastal State to the effect that he has reviewed and approved the management program and any amendments thereto. Certification may be omitted in

the case of a program submitted for preliminary approval.

(b) *Comment.* Statutory citation: Section 306(c)(4):

Prior to granting approval of a management program submitted by a coastal State, the Secretary shall find that * * * the management program and any changes thereto have been reviewed and approved by the Governor.

This requirement is self-explanatory.

§ 923.43 Segmentation.

(a) *Requirement.* If the State intends to develop and adopt its management program in two or more segments, it shall advise the Secretary as early as practicable stating the reasons why segmentation is appropriate and requesting his approval. Each segment of a management program developed by segments must show evidence (1) that the State will exercise policy control over each of the segmented management programs prior to, and following their integration into a complete State management program, such evidence to include completion of the requirements of § 923.11 (Boundaries of the coastal zone) and § 923.15 (National interest in the siting of facilities) for the State's entire coastal zone, (2) that the segment submitted for approval includes a geographic area on both sides of the coastal land-water interface, and (3) that a timetable and budget have been established for the timely completion of the remaining segments or segment.

(b) *Comment.* Statutory citation: Section 306(h):

At the discretion of the State and with the approval of the Secretary, a management program may be developed and adopted in segments so that immediate attention may be devoted to those areas within the coastal zone which most urgently need management programs: *Provided,* That, the State adequately provides for the ultimate coordination of the various segments of the management program into a single, unified program, and that the unified program will be completed as soon as reasonably practicable.

(1) This section of the Act reflects a recognition that it may be desirable for a State to develop and adopt its management program in segments rather than all at once because of a relatively long coastline, developmental pressures or public support in specific areas, or earlier regional management programs developed and adopted. It is important to note, however, that the ultimate objective of segmentation is completion of a management program for the coastal zone of the entire State in a timely fashion. Segmentation is at the State's option, but requires the approval of the Secretary. States should notify the Secretary at as early a date as possible regarding intention to prepare a management program in segments.

(2) Continuing involvement at the State as well as local level in the development and implementation of segmented programs is essential. This emphasis on State participation and coordination with the program as a whole should be reflected in the individual segments of a management program. Regional agencies and local governments may play a large role in developing and carrying out such segmented programs, but there must be a continuing State voice throughout this process. This State involvement shall be expressed in the first segment of the management program in the form of evidence that (i) the boundaries of the coastal zone for the entire State have been defined (pursuant to § 923.11) and (ii) there has been adequate consideration of the national interest involved in the siting of facilities necessary to meet requirements which are other than local in nature (pursuant to § 923.15) for the State's entire coastal zone. These requirements are designed to assure that the development of a Statewide coastal zone management program proceeds in an orderly fashion and that segmented programs reflect accurately the needs and capabilities of the State's entire coastal zone which are represented in that particular segment.

(3) The Act's intent of encouraging and assisting State governments to develop a comprehensive program for the control of land and water uses in the coastal zone is clear. This intent should therefore apply to segments as well, and segmented management programs should be comprehensive in nature and deal with the relationship between and among land and water uses. No absolute minimum or maximum geographic size limitations will be established for the area of coverage of a segment. On the one hand, segments should include an area large enough to permit comprehensive analyses of the attributes and limitations of coastal resources within the segment of State needs for the utilization or protection of these resources and of the interrelationships of such utilizations. On the other hand, it is not contemplated that a segmented management program will be developed solely for the purpose of protecting or controlling a single coastal resource or use, however desirable that may be.

(4) One of the distinguishing features of a coastal zone management program is its recognition of the relationship between land uses and their effect upon coastal waters, and vice versa. Segments should likewise recognize this relationship between land and water by including at least the dividing line between them, plus the lands or waters on either side which are mutually affected. In the case of a segment which is predominantly land, the boundaries shall include those waters which are directly and significantly impacted by land uses in the segment. Where the predominant part of the segment is water, the boundaries shall include the adjacent shorelands strongly influenced by the waters, including at least transitional and inter-tidal areas, salt marshes, wetlands and beaches (or similar such areas in Great Lake States).

(5) Segmented management programs submitted for approval will be reviewed and approved in exactly the same manner as programs for complete coastal zones, utilizing the same approval criteria, plus those of this section.

§ 923.44 Applicability of air and water pollution control requirements.

(a) *Requirement.* In order to fulfill the requirements contained in Section 307(f) of the Act the management program must be developed in close coordination with the planning and regulatory systems being implemented under the Federal Water Pollution Control Act and Clean Air Act, as amended, and be consistent with applicable State or Federal water and air pollution control standards in the coastal zone. Documentation by the official or officials responsible for State implementation of air and water pollution control activities that those requirements have been incorporated into the body of the coastal zone management program should accompany submission of the management program.

(b) *Comment:* Statutory citation: Section 307(f):

Notwithstanding any other provision of this title, nothing in this title shall in any way affect any requirement (1) established by the Federal Water Pollution Control Act, as amended, or the Clean Air Act, as amended, or (2) established by the Federal government, or any State or local government pursuant to such Acts. Such requirements shall be incorporated in any program developed pursuant to this title, and shall be the water pollution control requirements and air pollution control requirements applicable to such program.

(1) The basic purpose of this requirement is to ensure that the management program does not conflict with the national and State policies, plans and regulations mandated by the Federal Water Pollution Control Act, as amended, and the Clean Air Act as amended. The policies and standards adopted pursuant to these Acts should be considered essential baselines against which the overall management program is developed. This is a specific statutory requirement that reflects the overall coastal zone management objective of unified state management of environmental laws, regulations and applicable standards. To this end, management programs should provide for continuing coordination and cooperation with air and water programs during subsequent administration of the approved management program.

(2) There are also significant opportunities for developing working relationships between air and water quality agencies and coastal zone management programs. These opportunities include such activities as joint development of Section 208 areawide waste treatment management planning and coastal zone management programs; consolidation and/or incorporation of various planning and regulatory elements into these closely related programs; coordination of monitoring and evaluation activities; increased management attention being accorded specifically to the coastal waters; consultation concerning the desirability of adjusting state water quality standards and criteria to complement coastal zone management policies; and designation of areas of particular concern or priority uses.

Subpart F—Applications for Administrative Grants

§ 923.50 General.

The primary purpose of administrative grants made under section 306 of the Act is to assist the States to implement coastal zone management programs following their approval by the Secretary of Commerce. The purpose of these guidelines is to define clearly the processes by which grantees apply for and administer grants under the Act. These guidelines shall be used and interpreted in conjunction with the Grants Management Manual for Grants under the Coastal Zone Management Act, hereinafter referred to as the "Manual." This Manual contains procedures and guidelines for the administration of all grants covered under the Coastal Zone Management Act of 1972. It has been designed as a tool for grantees, although it addresses the responsibilities of the National Oceanic and Atmospheric Administration and its Office of Coastal Zone Management, which is responsible for administering programs under the Act. The Manual incorporates a wide range of Federal requirements, including those established by the Office of Management and Budget, the General Services Administration, the Department of the Treasury, the General Accounting Office and the Department of Commerce. In addition to specific policy requirements of these agencies, the Manual includes recommended policies and procedures for grantees to use in submitting a grant application. Inclusion of recommended policies and procedures for grantees does not limit the choice of grantees in selecting those most useful and applicable to local requirements and conditions.

§ 923.51 Administration of the program.

The Congress assigned the responsibility for the administration of the Coastal Zone Management Act of 1972 to the Secretary of Commerce, who has designated the National Oceanic and Atmospheric Administration (NOAA) as the agency in the Department of Commerce to manage the program. NOAA has established the Office of Coastal Zone Management for this purpose. Requests for information on grant applications and the applications themselves should be directed to:

Director, Office of Coastal Zone Management (OCZM)
National Oceanic and Atmospheric Administration,
U.S. Department of Commerce
Rockville, Maryland 20852

§ 923.52 State responsibility.

(a) The application shall contain a designation by the Governor of a coastal State of a single agency to receive and have fiscal and programmatic responsibility for administering grants to implement the approved management program.

(b) A single State application will cover all program management elements, whether carried out by State agencies, areawide/regional agencies, local governments, interstate or other entities.

§ 923.53 Allocation.

Section 306(f) allows a State to allocate a portion of its administrative grant to sub-State or multi-State entities if the work to result from the allocation contributes to the effective implementation of the State's approved coastal zone management program. The requirements for identifying such allocations are set forth in § 923.55(e).

§ 923.54 Geographical segmentation.

Authority is provided in the Act for a State's management program to be developed and adopted in segments. Additional criteria for the approval of a segmented management program are set forth in Subpart E § 923.43. Application procedures for an administrative grant to assist in administering an approved segmented management program will be the same as set forth in this subpart for applications to administer an approved management program for the entire coastal zone of a State.

§ 923.55 Application for the initial administrative grant.

(a) The Form CD–288, Preapplication for Federal Assistance, required only for the initial grant, must be submitted 120 days prior to the beginning date of the requested grant. The preapplication shall include documentation, signed by the Governor, designating the State office, agency or entity to apply for and administer the grant. Copies of the approved management program are not required. The preapplication form may be submitted prior to the Secretary's approval of the applicant's management program provided, after consultation with OCZM, approval is anticipated within 60 days of submittal of the preapplication.

(b) All applications are subject to the provisions of OMB Circular A–95 (revised). The Form CD–288, Preapplication for Federal Assistance, will be transmitted to the appropriate clearinghouses at the time it is submitted to the Office of Coastal Zone Management (OCZM). If the application is determined to be Statewide or broader in nature, a statement to that effect shall be attached to the Preapplication form submitted to OCZM. Such a determination does not preclude the State clearinghouse from involving areawide clearinghouses in the review. In any event, whether the application is considered to be Statewide or not, the Preapplication form shall include an attachment indicating the date copies of the Preapplication form were transmitted to the State clearinghouse and if applicable, the identity of the areawide clearinghouse(s) receiving copies of the Preapplication form and the date(s) transmitted. The Preapplication form may be used to meet the project notification and review requirements of OMB Circular A–95 with the concurrence of the appropriate clearinghouses. In the absence of such concurrence the project notification and review procedures, established State and areawide clearinghouses, should be implemented simultaneously with the distribution of the preapplication form.

(c) Costs claimed as charges to the grant project must be beneficial and necessary to the objectives of the grant project. The allowability of costs will be determined in accordance with the provisions of FMC 74–4. Administrative grants made under section 306(a) of the Act are clearly intended to assist the States in administering their approved management programs. Such intent precludes tasks and related costs for long range research and studies. Nevertheless it is recognized that the coastal zone and its management is a dynamic and evolving process wherein experience may reveal the need for specially focused, short-term studies, leading to improved management processes and techniques. The OCZM will consider such tasks and their costs, based upon demonstrated need and expected contribution to more effective management programs.

(d) The Form CD–292, Application for Federal Assistance (Non-Construction Programs), constitutes the formal application and must be submitted 60 days prior to the desired grant beginning date. The application must be accompanied by evidence of compliance with A–95 requirements including the resolution of any problems raised by the proposed project. The OCZM will not accept applications substantially deficient in adherence to A–95 requirements.

(e) The State's work program implementing the approved management program is to be set forth in Part IV, Program Narrative, of the Form CD–292 and must describe the work to be accomplished during the grant period. The work program should include:

(1) An identification of those elements of the approved management program that are to be supported all or in part by the grant and the matching share, hereinafter called the grant project. In any event, activities related to the establishment and implementation of State responsibilities pursuant to Section 307 (c) (3) and Section 307(d) of the Act, are to be included in the grant project.

(2) A precise statement of the major tasks required to implement each element.

(3) For each task, the following should be specified:

(i) A concise statement of how each task will accomplish all or part of the program element to which it is related. Identify any other State, areawide, regional or interstate agencies or local governments that will be allocated responsibility for carrying out all or portions of the task. Indicate the estimated cost of the subcontract/grant for each allocation.

(ii) For each task indicate the estimated total cost. Also indicate the estimated total man-months, if any, allocated to the task from the applicant's in-house staff.

[redacted]

(4) The sum of all the task costs in sub-paragraph (3) of this paragraph should equal the total estimated grant project costs.

(5) Using two categories, Professional and Clerical, indicate the total number of personnel in each category on the applicant's in-house staff, that will be assigned to the grant project. Additionally indicate the number assigned full time and the number assigned less than full time in the two categories.

(6) An identification of those management program elements, if any, that will not be supported by the grant project, and how they will be implemented.

§ 923.56 Approval of applications.

(a) The application for an administrative grant of any coastal State with a management program approved by the Secretary of Commerce, which complies with the policies and requirements of the Act and these guidelines, shall be approved by OCZM, assuming available funding.

(b) Should an application be found deficient, OCZM will notify the applicant in writing, setting forth in detail the manner in which the application fails to conform to the requirements of the Act or this subpart. Conferences may be held on these matters. Corrections or adjustments to the application will provide the basis for resubmittal of the application for further consideration and review.

(c) OCZM may, upon finding of extenuating circumstances relating to applications for assistance, waive appropriate administrative requirements contained herein.

§ 923.57 Amendments.

Amendments to an approved application must be submitted to, and approved by, the Secretary prior to initiation of the change contemplated. Requests for substantial changes should be discussed with OCZM well in advance. It is recognized that, while all amendments must be approved by OCZM, most such requests will be relatively minor in scope; therefore, approval may be presumed for minor amendments if the State has not been notified of objections within 30 working days of date of postmark of the request.

§ 923.58 Applications for second and subsequent year grants.

(a) Second and subsequent year applications will follow the procedures set forth in this subpart, with the following exceptions:

(1) The preapplication form may be used at the option of the applicant. If used, ty procedures set forth in § 923.55 (b) will be followed and the preapplication is to be submitted 120 days prior to the beginning date of the requested grant. If the preapplication form is not used, the A–95 project notification and review procedures established by State and areawide clearinghouses should be followed.

(2) The application must contain a statement by the Governor of the coastal State or his designee that the management program as approved earlier by the Secretary of Commerce, with any approved amendments, is operative and has not been materially altered. This statement will provide the basis for an annual OCZM certification that the approved management program remains in effect, thus fulfilling, in part, the requirements of section 309(a) for a continuing review of management programs.

(3) The Governor's document designating the applicant agency is not required, unless there has been a change of designation.

(4) Copies of the approved management program or approved amendments thereto are not required.

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PART IV

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

■

Estuarine Sanctuary Guidelines

Title 15—Commerce and Foreign Trade

CHAPTER IX—NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, DEPARTMENT OF COMMERCE

PART 921—ESTURAINE SANCTUARY GUIDELINES

The National Oceanic and Atmospheric Administration (NOAA) on March 7, 1974, proposed guidelines (15 CFR Part 921) pursuant to section 312 of the Coastal Zone Management Act of 1972 (Pub. L. 92-583, 86 Stat. 1280), hereinafter referred to as the "Act," for the purpose of establishing the policy and procedures for the nomination, selection and management of estuarine sanctuaries.

Written comments were to be submitted to the Office of Coastal Environment (now the Office of Coastal Zone Management), National Oceanic and Atmospheric Administration, before April 8, 1974, and consideration has been given those comments.

The Act recognizes that the coastal zone is rich in a variety of natural, commercial, recreational, industrial and esthetic resources of immediate and potential value to the present and future well-being of the nation. States are encouraged to develop and implement management programs to achieve wise use of the resources of the coastal zone, and the Act authorizes Federal grants to the States for these purposes (sections 305 and 306).

In addition, under section 312 of the Act, the Secretary of Commerce is authorized to make available to a coastal State grants of up to 50 per centum of the cost of acquisition, development and operation of estuarine sanctuaries. The guidelines contained in this part are for grants under section 312.

In general, section 312 provides that grants may be awarded to States on a matching basis to acquire, develop and operate natural areas as estuarine sanctuaries in order that scientists and students may be provided the opportunity to examine over a period of time ecological relationships within the area. The purpose of these guidelines is to establish the rules and regulations for implementation of this program.

The National Oceanic and Atmospheric Administration is publishing herewith the final regulations describing the procedures for applications to receive grants for estuarine sanctuaries under section 312 of the Act. The final regulations and criteria were revised from the proposed guidelines based on the comments received. A total of fifty (50) States, agencies, organizations and individuals submitted responses to the proposed section 312 guidelines published in the FEDERAL REGISTER on March 7, 1974. Of those responses received, eight (8) offered no comment or were wholly favorable as to the nature and content of the guidelines as originally proposed. Forty-two (42) commentators submitted suggestions concerning the proposed section 312 guidelines.

The following summary analyzes key comments received on various sections of the proposed regulations and presents the rationale for the responses made.

Section 921.2 *Definitions.* Three comments requested that the term "estuary" be defined. Although the term is defined in the Act and also in the regulations dealing with Coastal Zone Management Program Development Grants (Part 920 of this chapter) published November 29, 1973, it has been added to these regulations and broadened slightly to include marine lagoons with restricted freshwater input such as might occur along the south Texas coast.

Two other comments requested that the "primary purpose" referred to in § 921.2(b) be clearly defined. Although elaborated upon in § 921.3(a), for the purpose of clarity this change has been made.

Section 921.3 *Objectives and Implementation.* Several comments suggested that the estuarine sanctuary program objectives were too narrowly defined and specifically that they should be broadened to include the acquisition and preservation of unique or endangered estuaries for wildlife or ecological reasons. Although the Act (section 302) declares it the nation's policy to preserve, protect, develop, and where possible, to restore or enhance coastal resources, this is perceived to be achievable through State actions pursuant to sections 305 and 305. While it is recognized that the creation of an estuarine sanctuary may in fact serve to preserve or protect an area or biological community, the legislative history of section 312 clearly indicates the estuarine sanctuary program was not intended to duplicate existing broad purpose Federal preservation programs, such as might be accommodated by use of the Land and Water Conservation Fund Act. Instead, both in the Act as well as its legislative history, the objective is defined as preserving representative estuarine areas for long-term research and educational uses.

Three other comments suggested the objectives of the program should be enlarged to include the restoration of environmentally degraded areas. This, too, is perceived to be a State requirement separate from section 312. In addition, adequate authority for restoring degraded water areas now exists (for example, Pub. L. 92-500 in addition to sections 302, 305 and 306 of the Act). No significant additional benefit would appear to result from declaring an area an estuarine sanctuary for the purposes of restoration.

A few comments indicated that the examples of sanctuary use were too heavily weighted toward scientific uses to the exclusion of educational uses. Public education concerning the value and benefits of, and the nature of conflict within the coastal zone, will be essential to the success of a coastal zone management program. The section has been changed to reflect an appropriate concern for educational use.

Some commentators suggested changes in or additions to the specific examples of sanctuary uses and purposes. These examples were taken from the Senate and House Committee Reports and are considered sufficient to reflect the kinds of uses intended within an estuarine sanctuary.

Several comments were received pertaining to § 921.3(c) involving the restrictions against overemphasis of destructive or manipulative research. Ten comments indicated that the section was too weak and would not provide sufficient long-term protection for the sanctuary ecosystem. Several commentators specifically recommended deleting the words "would not normally be permitted" and inserting in their place "will not be permitted." In contrast, three respondents indicated that the potential use of estuarine sanctuaries for manipulative or destructive research was too restricted, and that these uses should be generally permitted if not encouraged.

The legislative history of section 312 clearly indicates that the intent of the estuarine sanctuary program should be to preserve representative estuarine areas so that they may provide long-term (virtually permanent) scientific and educational use. The uses perceived are compatible with what has been defined as "research natural areas." In an era of rapidly degrading estuarine environments, the estuarine sanctuary program will ensure that a representative series of natural areas will be available for scientific or educational uses dependent on that natural character, for example, for baseline studies, for use in understanding the functioning of natural ecological systems, for controls against which the impacts of development in other areas might be compared, and as interpretive centers for educational purposes. Any use, research or otherwise, which would destroy or detract from the natural system, would be inappropriate under this program.

In general, the necessity of or benefit from permitting manipulative or destructive research within an estuarine sanctuary is unclear. While there is a legitimate need for such kinds of research, ample opportunity for manipulative or destructive research to assess directly man's impact or stresses on the estuarine environment exists now without the need for creation or use of an estuarine sanctuary for this purpose. In contrast, a clear need exists for natural areas to serve as controls for manipulative research or research on altered systems.

The section on manipulative research has been changed to reflect the concern for continued maintenance of the area as a natural system. However, the modifier "normally" has been retained because, within these limits, it is not felt necessary to preclude all such uses; the occasion may rarely arise when because of a thoroughly demonstrated direct benefit, such research may be permitted.

Several comments suggested that the program should include degraded estuarine systems, rather than be limited to areas which are "relatively undisturbed by human activities." Such areas would permit research efforts designed to restore an estuarine area. As indicated

above, an ample legislative mandate to restore environmentally degraded areas already exists; the benefits to be derived from declaring such areas estuarine sanctuaries would be marginal. Indeed, it would appear that if restoration efforts cannot occur without estuarine sanctuary designation, then, given the limited resources of this program, such efforts would not be feasible.

A few commentators suggested that the phrase (§ 921.3(e)) "if sufficient permanence and control by the State can be assured, the acquisition of a sanctuary may involve less than the acquisition of a fee simple interest" be more clearly defined. Explanatory language has been added to that section.

Section 921.4 *Zoogeographic Classification.* Because the classification scheme utilized plants as well as animals, two commentators suggested that zoogeographic be changed to biogeographic. This change is reflected in the final regulations.

One comment suggested that selection of sanctuaries should depend on the pressures and threats being brought to bear upon the natural areas involved even if this meant selecting several sanctuaries from one classification and none from another.

The legislative history of section 312 clearly shows the intent to select estuarine sanctuaries on a rational basis which would reflect regional differentiation and a variety of ecosystems. The biogeographic classification system, which reflects geographic, hydrographic, and biologic differences, fulfills that intention. A scheme which would abandon that system, or another similar one, and would not fulfill the requirements of providing regional differentiation and a variety of ecosystems, would not be consistent with the intended purpose of the Act.

A few comments received suggested that the biogeographic classification scheme be enlarged by the addition of a new class reflecting an area or State of special concern or interest to the respondent. (No two commentators suggested the same area.) It is felt that adequate national representation is provided by the biogeographic scheme proposed, and that the changes offered were in most cases examples of sub-categories that might be utilized.

One comment suggested a specific change in the definition of the "Great Lakes" category. Portions of that suggestion have been incorporated into the final rules.

Two commentators requested assurance that sub-categories of the biogeographic scheme will in fact be utilized. The final language substitutes "will be developed and utilized" for "may be developed and utilized."

Section 921.5 *Multiple Use.* Several comments were received pertaining to the multiple use concept. Three commentators suggested that the multiple use directive was contrary to or absent from the Act and should be omitted. Ten respondents felt the concept should be more explicitly defined and restricted so that the primary purpose of the sanctuary would be more clearly protected. In contrast, two commentators felt that the definition might prove too restrictive and should be broadened. Several commentators suggested that examples of anticipated multiple use might be appropriate.

While recognizing that it is not always possible to accommodate more than a single use in an environmentally sensitive area, it is not the intention to unnecessarily preclude the uses of sanctuary areas where they are clearly compatible with and do not detract from the long-term protection of the ecosystem for scientific and educational purposes. The language of § 921.5 has been changed accordingly.

Section 921.6 *Relationship to Other Provisions of the Act and to Marine Sanctuaries.* Several comments were received which commended and stressed the need for close coordination between the development of State coastal zone management programs, especially and land and water use controls, and the estuarine sanctuary program.

The relationship between the two programs is emphasized: estuarine sanctuaries should provide benefit—both short-term and long-term—to coastal zone management decision-makers; and State coastal zone management programs must provide necessary protection for estuarine sanctuaries. This necessary coordination is discussed not only in the estuarine sanctuary regulations, but will also be addressed in an appropriate fashion in guidelines and rules for Coastal Zone Management Program Approval Criteria and Administrative Grants.

Three commentators discussed the need for swift action by both State and Federal governments to establish and acquire estuarine sanctuaries. The Office of Coastal Zone Management intends to pursue the program as swiftly as available manpower restraints will permit.

A few comments sought reassurance that the estuarine sanctuaries program will in fact be coordinated with the Marine Sanctuaries Program (Title III, Pub. L. 92-532). The guidelines have been changed to reflect that both programs will be administered by the same office.

SUBPART B—APPLICATION FOR GRANTS

Section 921.10 *General.* One reviewer indicated uncertainty about which State agency may submit applications for grants under section 312. Although individual States may vary in the choice of individual agencies to apply for an estuarine sanctuary, because of the necessity for coordination with the State coastal zone management program the entity within the State which is the certified contact with the Office of Coastal Zone Management, NOAA, responsible for the administration of the coastal zone management program must endorse or approve an estuarine sanctuary application.

Appropriate language has been included to ensure this coordination.

Section 921.11 *Initial Application for Acquisition, Development and Operation Grants.* Two comments requested that the source and nature of acceptable matching funds should be explicitly identified.

OMB Circular A-102 generally defines and identifies legitimate "match" for Federal grant projects. In general, reference should be made to that document. However, the section has been expanded in response to some specific and frequent questions.

Two comments stressed the need for increased availability of research funds to adequately utilize the potential of estuarine sanctuaries. While not an appropriate function of the estuarine sanctuary program, the Office of Coastal Zone Management is discussing the necessity of adequate funding with appropriate agencies.

One comment suggested that the term "legal description" of the sanctuary (§ 921.11(a)) is not appropriate for all categories of information requested. The word "legal" has been omitted.

Three reviewers indicated that the Act provides no basis for consideration of socio-economic impacts (§ 921.11(1)) and that this criterion seemed inappropriate to selecting estuarine sanctuaries. Apparently these reviewers misunderstood the intention of this requirement. The information in this section is necessary for preparation of an environmental impact statement which will be prepared pursuant to NEPA. Although required in the application, such information is not a part of the selection criteria, which are addressed in Subpart C, § 921.20.

One similar comment was received with regard to consideration of existing and potential uses and conflicts (§ 921.11(h)). This item is also discussed under selection criteria (§ 921.20(h)). It is intended that this criterion will only be considered when choosing between two or more sanctuary applications within the same biogeographic category which are of otherwise equal merit.

One comment drew attention to an apparent typographic error in § 921.11 (m) where the term "marine estuaries" seems out of context. This has been corrected.

Two commentators suggested that public hearings should be required in the development of an estuarine sanctuary application. Although such a hearing is deemed desirable by the Office of Coastal Zone Management, it would not always seem to be necessary. The language in § 920.11(1) has been changed to reflect the sincere concern for the adequate involvement of the public, which is also addressed under a new § 920.21.

One respondent suggested that a new section be added requiring the applicant to discuss alternative methods of acquisition or control of the area, including the designation of a marine sanctuary, in place of establishing an estuarine sanctuary. A new section (§ 920.11(n)) has been added for this purpose.

Section 921.12 *Subsequent Application for Development and Operation Grants.* Three commentators expressed concern that the intent of § 921.12 be more clearly expressed. Appropriate changes have been made.

One comment was made that a provision should be included to use existing Federally owned land for the purpose of the estuarine sanctuary program. A section has been added for that purpose.

Section 921.20 *Criteria for Selection.* One comment suggested that the consideration of conflict with existing or potential competing uses should not be included as a selection criterion. As discussed above, this criterion is considered appropriate.

Another reviewer suggested the addition of a new criterion, consideration of "the need to protect a particular estuary from harmful development." As discussed earlier, this criterion is not considered appropriate. Such a basis for determining selection would lead to a reactionary, random series of estuarine sanctuaries, rather than the rationally chosen representative series mandated in the legislative history.

Two reviewers commented that the limitation on the Federal share ($2,000,000 for each sanctuary) was too low and would severely restrict the usefulness of the program. However, this limitation is provided by the Act.

Another commentator suggested that § 921.20(g) was unnecessarily restrictive in that it might prevent selecting an estuarine sanctuary in an area adjacent to existing preserved lands where the conjunction might be mutually beneficial. The language of § 921.20(g) does not preclude such action, but has been changed to specifically permit this possibility.

Two commentators inquired whether the reference to a "draft" environmental impact statement (§ 921.20, last paragraph) indicated an intention to avoid further compliance with NEPA. It is the firm intention of the Office of Coastal Zone Management to fully comply in all respects with NEPA. The word "draft" has been struck.

Three reviewers addressed the problems of providing adequate public participation in the review and selection process. In addition to the change in § 920.11(1), a new section has been added to address this issue.

SUBPART D—OPERATION

Section 921.30 *General.* One commentator suggested that during contract negotiations, there should be a meeting between the applicant agency and proposed sanctuary management team, and representatives of the Office of Coastal Zone Management. The general provisions have been broadened to provide for this suggestion.

Two comments were submitted which urged that some discretion be exercised in the use and access to the sanctuary by scientists and students. Two other comments were received which requested specific protection for use by the general public. The guidelines have been changed to include these suggestions.

One comment was received suggesting language to clarify § 921.30(g), This was incorporated into the guidelines.

Two commentators expressed concern for enforcement capabilities and activities to ensure protection of the estuarine sanctuaries. A new section has been added which addresses this issue.

Finally, one suggestion was received that a vehicle for change in the management policy or research programs should be provided. A new section has been added for that purpose.

Accordingly, having considered the comments received and other relevant information, the Secretary concludes by adopting the final regulations describing the procedure for applications to receive estuarine sanctuary grants under section 312 of the Act, as modified and set forth below.

Effective date: June 3, 1974.

Dated: May 31, 1974.

ROBERT M. WHITE,
Administrator.

Subpart A—General

Sec.
921.1 Policy and objectives.
921.2 Definitions.
921.3 Objectives and implementation of the program.
921.4 Biogeographic classification.
921.5 Multiple use.
921.6 Relationship to other provisions of the Act and to marine sanctuaries.

Subpart B—Application for Grants

921.10 General.
921.11 Application for initial acquisition, development and operation grants.
921.12 Application for subsequent development and operation grants.
921.13 Federally owned lands.

Subpart C—Selection Criteria

921.20 Criteria for selection.
921.21 Public participation.

Subpart D—Operation

921.30 General.
921.31 Changes in the sanctuary boundary, management policy or research program.
921.32 Program review.

AUTHORITY: Sec. 312 of the Coastal Zone Management Act of 1972 (Pub. L. 92-583, 86 Stat. 1280).

Subpart A—General

§ 921.1 Policy and Objectives.

The estuarine sanctuaries program will provide grants to States on a matching basis to acquire, develop and operate natural areas as estuarine sanctuaries in order that scientists and students may be provided the opportunity to examine over a period of time the ecological relationships within the area. The purpose of these guidelines is to establish the rules and regulations for implementation of the program.

§ 921.2 Definitions.

(a) In addition to the definitions found in the Act and in the regulations dealing with Coastal Zone Management Program Development Grants published November 29, 1973 (Part 920 of this chapter) the term "estuarine sanctuary" as defined in the Act, means a research area which may include any part or all of an estuary, adjoining transitional areas, and adjacent uplands, constituting to the extent feasible a natural unit, set aside to provide scientists and students the opportunity to examine over a period of time the ecological relationships within the area.

(b) For the purposes of this section, "estuary" means that part of a river or stream or other body of water having unimpared connection with the open sea where the seawater is measurably diluted with freshwater derived from land drainage. The term includes estuary-type areas of the Great Lakes as well as lagoons in more arid coastal regions.

(c) The term "multiple use" as used in this section shall mean the simultaneous utilization of an area or resource for a variety of compatible purposes or to provide more than one benefit. The term implies the long-term, continued uses of such resources in such a fashion that other uses will not interfere with, diminish or prevent the primary purpose, which is the long-term protection of the area for scientific and educational use.

§ 921.3 Objectives and implementation of the program.

(a) General. The purpose of the estuarine sanctuaries program is to create natural field laboratories in which to gather data and make studies of the natural and human processes occurring within the estuaries of the coastal zone. This shall be accomplished by the establishment of a series of estuarine sanctuaries which will be designated so that at least one representative of each type of estuarine ecosystem will endure into the future for scientific and educational purposes. The primary use of estuarine sanctuaries shall be for research and educational purposes, especially to provide some of the information essential to coastal zone management decision-making. Specific examples of such purposes and uses include but are not limited to:

(1) To gain a thorough understanding of the ecological relationships within the estuarine environment.

(2) To make baseline ecological measurements.

(3) To monitor significant or vital changes in the estuarine environment.

(4) To assess the effects of man's stresses on the ecosystem and to forecast and mitigate possible deterioration from human activities.

(5) To provide a vehicle for increasing public knowledge and awareness of the complex nature of estuarine systems, their values and benefits to man and nature, and the problems which confront them.

(b) The emphasis within the program will be on the designation as estuarine sanctuaries of areas which will serve as natural field laboratories for studies and investigations over an extended period. The area chosen as an estuarine sanctuary shall, to the extent feasible, include water and land masses constituting a natural ecological unit.

(c) In order that the estuarine sanctuary will be available for future studies, research involving the destruction of any portion of an estuarine sanctuary which would permanently alter the nature of the ecosystem shall not normally be

permitted. In the unusual circumstances where permitted, manipulative field research shall be carefully controlled. No experiment which involves manipulative research shall be initiated until the termination date is specified and evidence given that the environment will be returned to its condition which existed prior to the experiment.

(d) It is anticipated that most of the areas selected as sanctuaries will be relatively undisturbed by human activities at the time of acquisition. Therefore, most of the areas selected will be areas with a minimum of development, industry or habitation.

(e) If sufficient permanence and control by the State can be assured, the acquisition of a sanctuary may involve less than the acquisition of a fee simple interest. Such interest may be, for example, the acquisition of a conservation easement, "development rights", or other partial interest sufficient to assure the protection of the natural system. Leasing, which would not assure permanent protection of the system, would not be an acceptable alternative.

§ 921.4 Biogeographic classification.

(a) It is intended that estuarine sanctuaries should not be chosen at random, but should reflect regional differentiation and a variety of ecosystems so as to cover all significant variations. To ensure adequate representation of all estuarine types reflecting regional differentiation and a variety of ecosystems, selections will be made by the Secretary from the following biogeographic classifications:

1. *Arcadian.* Northeast Atlantic coast south to Cape Cod, glaciated shoreline subject to winter icing; well developed algal flora; boreal biota.

2. *Virginian.* Middle Atlantic coast from Cape Cod to Cape Hatteras; lowland streams, coastal marshes and muddy bottoms; characteristics transitional between 1 and 3; biota primarily temperate with some boreal representatives.

3. *Carolinian.* South Atlantic coast, from Cape Hatteras to Cape Kennedy; extensive marshes and swamps; waters turbid and productive; biota temperate with seasonal tropical elements.

4. *West Indian.* South Florida coast from Cape Kennedy to Cedar Key; and Caribbean Islands; shoreland low-lying limestone; calcareous sands, marls and coral reefs; coastal marshes and mangroves; tropical biota.

5. *Louistanian.* Northern Gulf of Mexico, from Cedar Key to Mexico; characteristics of 3, with components of 4; strongly influenced by terrigenous factors; biota primarily temperate.

6. *Californian.* South Pacific coast from Mexico to Cape Mendocino; shoreland influenced by coastal mountains; rocky coasts with reduced fresh-water runoff; general absence of marshes and swamps; biota temperate.

7. *Columbian.* North Pacific coast from Cape Mendocino to Canada; mountaineous shoreland; rocky coasts; extensive algal communities; biota primarily temperate with some boreal.

8. *Fiords.* South coast Alaska and Aleutians; precipitous mountains; deep estuaries, some with glaciers; shoreline heavily indented and subject to winter icing; biota boreal to sub-Arctic.

9. *Subarctic.* West and north coasts of Alaska; ice stressed coasts; biota Arctic and sub-Arctic.

10. *Insular.* Larger islands, sometimes with precipitous mountains; considerable wave action; frequently with endemic species; larger island groups primarily with tropical biota.

11. *Great Lakes.* Great Lakes of North America; bluff-dune or rocky, glaciated shoreline; limited wetlands; freshwater only; biota a mixture of boreal and temperate species with anadromous species and some marine invaders.

(b) Various sub-categories will be developed and utilized as appropriate.

§ 921.5 Multiple use.

(a) While the primary purpose of estuarine sanctuaries is to provide long-term protection for natural areas so that they may be used for scientific and educational purposes, multiple use of estuarine sanctuaries will be encouraged to the extent that such use is compatible with this primary sanctuary purpose. The capacity of a given sanctuary to accommodate additional uses, and the kinds and intensity of such use, will be determined on a case by case basis. While it is anticipated that compatible uses may generally include activities such as low intensity recreation, fishing, hunting, and wildlife observation, it is recognized that the exclusive use of an area for scientific or educational purposes may provide the optimum benefit to coastal zone management and resource use and may on occasion be necessary.

(b) There shall be no effort to balance or optimize uses of an estuarine sanctuary on economic or other bases. All additional uses of the sanctuary are clearly secondary to the primary purpose and uses, which are long-term maintenance of the ecosystem for scientific and educational uses. Non-compatible uses, including those uses which would cause significant short or long-term ecological change or would otherwise detract from or restrict the use of the sanctuary as a natural field laboratory, will be prohibited.

§ 921.6 Relationship to other provisions of the act and to marine sanctuaries.

(a) The estuarine sanctuary program must interact with the overall coastal zone management program in two ways: (1) the intended research use of the sanctuary should provide relevant data and conclusions of assistance to coastal zone management decision-making, and (2) when developed, the State's coastal zone management program must recognize and be designed to protect the estuarine sanctuary; appropriate land and water use regulations and planning considerations must apply to adjacent lands. Although estuarine sanctuaries should be incorporated into the State coastal zone management program, their designation need not await the development and approval of the management program where operation of the estuarine sanctuary would aid in the development of a program.

(b) The estuarine sanctuaries program will be conducted in close cooperation with the marine sanctuaries program (Title III of the Marine Protection, Research Act of 1972, Pub. L. 92-532, which is also administered by the Office of Coastal Zone Management, NOAA), which recognizes that certain areas of the ocean waters, as far seaward as the outer edge of the Continental Shelf, or other coastal waters where the tide ebbs and flows, or of the Great Lakes and their connecting waters, need to be preserved or restored for their conservation, recreational, ecologic or esthetic values. It is anticipated that the Secretary on occasion may establish marine sanctuaries to complement the designation by States of estuarine sanctuaries, where this may be mutually beneficial.

Subpart B—Application for Grants

§ 921.10 General.

Section 312 authorizes Federal grants to coastal States so that the States may establish sanctuaries according to regulations promulgated by the Secretary. Coastal States may file applications for grants with the Director, Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Rockville, Maryland 20852. That agency which has been certified to the Office of Coastal Zone Management as the entity responsible for administration of the State coastal zone management program may either submit an application directly, or must endorse and approve applications submitted by other agencies within the State.

§ 921.11 Application for initial acquisition, development and operation grants.

(a) Grants may be awarded on a matching basis to cover the costs of acquisition, development and operation of estuarine sanctuaries. States may use donations of land or money to satisfy all or part of the matching cost requirements.

(b) In general, lands acquired pursuant to this section, including State owned lands but not State owned submerged lands or bay bottoms, that occur within the proposed sanctuary boundary are legitimate costs and their fair market value may be included as match. However, the value of lands donated to or by the State for inclusion in the sanctuary may only be used to match other costs of land acquisition. In the event that lands already exist in a protected status, their value cannot be used as match for sanctuary development and operation grants, which will require their own matching funds.

(c) Development and operation costs may include the administrative expenses necessary to monitor the sanctuary, to ensure its continued viability and to protect the integrity of the ecosystem. Research will not normally be funded by Section 312 grants. It is anticipated that other sources of Federal, State and

private funds will be available for research in estuarine sanctuaries.

(d) Initial applications should contain the following information:

(1) Description of the proposed sanctuary include location, boundaries, size and cost of acquisition, operation and development. A map should be included, as well as an aerial photograph, if available.

(2) Classification of the proposed sanctuary according to the biogeographic scheme set forth in § 921.4.

(3) Description of the major physical, geographic and biological characteristics and resources of the proposed sanctuary.

(4) Identification of ownership patterns; proportion of land already in the public domain.

(5) Description of intended research uses, potential research organizations or agencies and benefits to the overall coastal zone management program.

(6) Demonstration of necessary authority to acquire or control and manage the sanctuary.

(7) Description of proposed management techniques, including the management agency, principles and proposed budget including both State and Federal shares.

(8) Description of existing and potential uses of and conflicts within the area if it were not declared an estuarine sanctuary; potential use, use restrictions and conflicts if the sanctuary is established.

(i) Assessment of the environmental and socio-economic impacts of declaring the area an estuarine sanctuary, including the economic impact of such a designation on the surrounding community and its tax base.

(9) Description of planned or anticipated land and water use and controls for contiguous lands surrounding the proposed sanctuary (including if appropriate an analysis of the desirability of creating a marine sanctuary in adjacent areas).

(10) List of protected sites, either within the estuarine sanctuaries program or within other Federal, State or private programs, which are located in the same regional or biogeographic classification.

(i) It is essential that the opportunity be provided for public involvement and input in the development of the sanctuary proposal and application. Where the application is controversial or where controversial issues are addressed, the State should provide adequate means to ensure that all interested parties have the opportunity to present their views. This may be in the form of an adequately advertised public hearing.

(ii) During the development of an estuarine sanctuary application, all landowners within the proposed boundaries should be informed in writing of the proposed grant application.

(iii) The application should indicate the manner in which the State solicited the views of all interested parties prior to the actual submission of the application.

(e) In order to develop a truly representative scheme of estuarine sanctuaries, the States should attempt to coordinate their activities. This will help to minimize the possibility of similar estuarine types being proposed for designation in the same region. The application should indicate the extent to which neighboring States were consulted.

(f) Discussion, including cost and feasibility, of alternative methods for acquisition, control and protection of the area to provide similar uses. Use of the Marine Sanctuary authority and funds from the Land and Water Conservation Fund Act should be specifically addressed.

§ 921.12 Application for subsequent development and operation grants.

(a) Although the initial grant application for creation of an estuarine sanctuary should include initial development and operation costs, subsequent applications may be submitted following acquisition and establishment of an estuarine sanctuary for additional development and operation funds. As indicated in § 921.11, these costs may include administrative costs necessary to monitor the sanctuary and to protect the integrity of the ecosystem. Extensive management programs, capital expenses, or research will not normally be funded by section 312 grants.

(b) After the creation of an estuarine sanctuary established under this program, applications for such development and operation grants should include at least the following information:

(1) Identification of the boundary.

(2) Specifications of the management program, including managing agency and techniques.

(3) Detailed budget.

(4) Discussion of recent and projected use of the sanctuary.

(5) Perceived threats to the integrity of the sanctuary.

§ 921.13 Federally owned lands.

(a) Where Federally owned lands are a part of or adjacent to the area proposed for designation as an estuarine sanctuary, or where the control of land and water uses on such lands is necessary to protect the natural system within the sanctuary, the State should contact the Federal agency maintaining control of the land to request cooperation in providing coordinated management policies. Such lands and State request, and the Federal agency response, should be identified and conveyed to the Office of Coastal Zone Management.

(b) Where such proposed use or control of Federally owned lands would not conflict with the Federal use of their lands, such cooperation and coordination is encouraged to the maximum extent feasible.

(c) Section 312 grants may not be awarded to Federal agencies for creation of estuarine sanctuaries in Federally owned lands; however, a similar status may be provided on a voluntary basis for Federally owned lands under the provisions of the Federal Committee on Ecological Preserves program.

Subpart C—Selection Criteria

§ 921.20 Criteria for selection.

Applications for grants to establish estuarine sanctuaries will be reviewed and judged on criteria including:

(a) Benefit to the coastal zone management program. Applications should demonstrate the benefit of the proposal to the development or operations of the overall coastal zone management program, including how well the proposal fits into the national program of representative estuarine types; the national or regional benefits; and the usefulness in research.

(b) The ecological characteristics of the ecosystem, including its biological productivity, diversity and representativeness. Extent of alteration of the natural system, its ability to remain a viable and healthy system in view of the present and possible development of external stresses.

(c) Size and choice of boundaries. To the extent feasible, estuarine sanctuaries should approximate a natural ecological unit. The minimal acceptable size will vary greatly and will depend on the nature of the ecosystem.

(d) Cost. Although the Act limits the Federal share of the cost for each sanctuary to $2,000,000, it is anticipated that in practice the average grant will be substantially less than this.

(e) Enhancement of non-competitive uses.

(f) Proximity and access to existing research facilities.

(g) Availability of suitable alternative sites already protected which might be capable of providing the same use or benefit. Unnecessary duplication of existing activities under other programs should be avoided. However, estuarine sanctuaries might be established adjacent to existing preserved lands where mutual enhancement or benefit of each might occur.

(h) Conflict with existing or potential competing uses.

(i) Compatibility with existing or proposed land and water use in contiguous areas.

If the initial review demonstrates the feasibility of the application, an environmental impact statement will be prepared by the Office of Coastal Zone Management in accordance with the National Environmental Policy Act of 1969 and implementing CEQ guidelines.

§ 921.21 Public participation.

Public participation will be an essential factor in the selection of estuarine sanctuaries. In addition to the participation during the application development process (§ 921.11(e)), public participation will be ensured at the Federal level by the NEPA process and by public hearings where desirable subsequent to NEPA. Such public hearings shall be held by the Office of Coastal Zone Management in the area to be affected by the proposed sanctuary no sooner than 30 days after it issues a draft environmental impact

statement on the sanctuary proposal. It will be the responsibility of the Office of Coastal Zone Management, with the assistance of the applicant State, to issue adequate public notice of its intention to hold a public hearing. Such public notice shall be distributed widely, especially in the area of the proposed sanctuary; affected property owners and those agencies, organizations or individuals with an identified interest in the area or estuarine sanctuary program shall be notified of the public hearing. The public notice shall contain the name, address and phone number of the appropriate Federal and State officials to contact for additional information about the proposal.

Subpart D—Operation

§ 921.30 General.

Management of estuarine sanctuaries shall be the responsibility of the applicant State or its agent. However, the research uses and management program must be in conformance with these guidelines and regulations, and others implemented by the provisions of individual grants. It is suggested that prior to the grant award, representatives of the proposed sanctuary management team and the Office of Coastal Zone Management meet to discuss management policy and standards. It is anticipated that the grant provisions will vary with individual circumstances and will be mutually agreed to by the applicant and the granting agency. As a minimum, the grant document for each sanctuary shall:

(a) Define the intended research purposes of the estuarine sanctuary.

(b) Define permitted, compatible, restricted and prohibited uses of the sanctuary.

(c) Include a provision for monitoring the uses of the sanctuary, to ensure compliance with the intended uses.

(d) Ensure ready access to land use of the sanctuary by scientists, students and the general public as desirable and permissible for coordinated research and education uses, as well as for other compatible purposes.

(e) Ensure public availability and reasonable distribution of research results for timely use in the development of coastal zone management programs.

(f) Provide a basis for annual review of the status of the sanctuary, its value to the coastal zone program.

(g) Specify how the integrity of the system which the sanctuary represents will be maintained.

(h) Provide adequate authority and intent to enforce management policy and use restrictions.

§ 921.31 Changes in the sanctuary boundary, management policy or research program.

(a) The approved sanctuary boundaries; management policy, including permissible and prohibited uses; and research program may only be changed after public notice and the opportunity of public review and participation such as outlined in § 921.21.

(b) Individuals or organizations which are concerned about possible improper use or restriction of use of estuarine sanctuaries may petition the State management agency and the Office of Coastal Zone Management directly for review of the management program.

§ 921.32 Program review.

It is anticipated that reports will be required from the applicant State on a regular basis, no more frequently than annually, on the status of each estuarine sanctuary. The estuarine sanctuary program will be regularly reviewed to ensure that the objectives of the program are being met and that the program itself is scientifically sound. The key to the success of the estuarine sanctuaries program is to assure that the results of the studies and research conducted in these sanctuaries are available in a timely fashion so that the States can develop and administer land and water use programs for the coastal zone. Accordingly, all information and reports, including annual reports, relating to estuarine sanctuaries shall be part of the public record and available at all times for inspection by the public.

[FR Doc.74-12775 Filed 5-31-74;9:57 am]

FEDERAL ACTIVITIES

There are numerous federal activities that can enhance the states' efforts in coastal zone management or with which states should establish dialogue. The following is a representative listing of agencies and their programs; which are, for easy reference, organized into three broad categories of interest--financial and technical assistance, regulatory and licensing, and direct action. A more comprehensive discussion of federal activities will appear in a soon to be published document on intergovernmental relations being prepared by the federal Office of Coastal Zone Management.

FINANCIAL AND TECHNICAL ASSISTANCE

This category of programs covers the government's domestic assistance functions including grants and technical assistance for research studies as well as to promote development.

AGRICULTURE

- Cooperative State Research Service: scientific research and cooperative extension services
- Farmers Home Administration: loans for rural farmers and communities for resource conservation and development
- Forest Service: forestry research and cooperative extension services.
- Soil Conservation Service: soil and water conservation research, river basin surveys, and resource conservation and development research

COMMERCE

- Economic Development Administration: planning grants and public works loans
- National Oceanic and Atmospheric Administration: fisheries conservation and development study, sea grant research, and estuarine sanctuary acquisition grants
- Bureau of the Census: Demographic studies and statistics

DEFENSE

- Corps of Engineers: flood control, navigation, and beach erosion projects and studies and flood plain management services

HEALTH, EDUCATION AND WELFARE

- National Institutes of Health: environmental health research, technical assistance, and training
- Office of Education: environmental education, library support, and academic facilities support
- Office of the Secretary: surplus property utilization

HOUSING AND URBAN DEVELOPMENT

- Community Planning and Development: comprehensive planning
- Office of Policy Development and Research: general research and technology activity grants
- Federal Disaster Assistance Administration: grant support for state disaster plans and programs

INTERIOR

- Bureau of Outdoor Recreation: outdoor recreation planning, acquisition, and development
- Bureau of Sport Fisheries and Wildlife: fisheries conservation and management, wildlife research and restoration

Geological Survey: resource surveys and mapping and water resource investigations
Office of Water Resources Research: research grants

TRANSPORTATION
Federal Aviation Administration: airport planning and development
Federal Highway Administration: highway research, planning, and construction and highway beautification
Urban Mass Transportation Administration: technical studies and capital improvements

REGIONAL COMMISSIONS
Coastal Plains: planning grants
New England: planning grants
Upper Great Lakes: planning grants
Pacific Northwest: planning grants

NATIONAL SCIENCE FOUNDATION: basic and applied research grants

ENVIRONMENTAL PROTECTION AGENCY: air and water pollution research planning, and demonstration grants, as well as construction grants

REGULATORY AND LICENSING

This category of programs covers the government's regulatory and licensing function including the controlling of activities and the adopting and enforcing of standards.

AGRICULTURE
Forest Service: permits for activities in National Forests

DEFENSE
Corps of Engineers: permits for filling, dredging, spoil disposal, and construction in navigable waters

HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration: flood insurance
Office of Interstate Land Sales Registration: interstate land sales

INTERIOR
Bureau of Land Management: permits for mining and occupancy on public lands including the continental shelf
Bureau of Reclamation: permits at damsites and recreation areas
Bureau of Sport Fisheries and Wildlife: permits on certain lakes, streams, and wildlife reservations

JUSTICE
Land and Natural Resources Division: injunctions and lawsuits

TRANSPORTATION
Coast Guard: boating safety and licensing
Federal Highway Administration: highway safety and regulation

ATOMIC ENERGY COMMISSION: licensing sites and siting for nuclear power plants

ENVIRONMENTAL PROTECTION AGENCY: injunctions and standards for water, air, and noise pollution

FEDERAL ENERGY ADMINISTRATION: fuel allocations and offshore permits for drilling

EDERAL POWER COMMISSION: Licensing for power plant sites and interstate transmission and pipe lines

DIRECT ACTION

This category of programs covers the government's management function including direct federal development, information services, and program coordination.

AGRICULTURE
- Forest Service: acquisition and development of system of national forests and wilderness areas

COMMERCE
- National Oceanic and Atmospheric Administration: establishment and management of a system of marine sanctuaries

GENERAL SERVICES ADMINISTRATION: management of federal property and installations

INTERIOR
- Bureau of Land Management: administration and management of federally-owned lands
- National Park Service: acquisition and development of a system of national parks and recreation areas
- Bureau of Sport Fisheries and Wildlife: acquisition and management of fish and wildlife sanctuaries
- Geological Survey: development and management of resources and land information program (RALI)

WATER RESOURCES COUNCIL: support and coordination of studies of River Basin Commissions

OFFICE OF MANAGEMENT AND BUDGET: overseer of procedures adopted under OMB Circular no. A-95

FEDERAL REGIONAL COUNCILS: coordination of multi-agency studies and administrator of Integrated Grants Administration programs

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